Sleep Quality Impact on the Venezuelan Indigenous Population and their Job Occupation Influence

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Abstract

It has descriptively been analyzed a meaningful sample gotten from the Spanish version (translated and adapted by Royuela, 1994; 1996; 1997) of the Pittsburgh Sleep Quality Index (PSQI) questionnaire. Derived from this analysis, it has statistically been proven the thesis that states that the indigenous populations tend to have good sleep quality due to the fact that the presence of urban pollution factors (electricity, technology, work pressure, among other aspects), which presumably affect it, is low within the indigenous surroundings. It is also considered that the sleep of the indigenous populations is generally conditioned by natural variations related to their genre, their life stages or some external factors that characterized their occupational performance or their geo-climate habitat.

Questionnaire, Sleep Quality, Occupational Performance

JEL Classifications: J11, F43

1. Introduction

According to the United Nations Permanent Forum on Indigenous Issues in Cuningham (UNPFII-2010), there are approximately 370 million indigenous people spread in 90 countries worldwide, they represent 5% of the world population, but they are also part of the 15% poorest people on the planet (SOSTENIBILIDAD Para Todos, n.d.).

Based on the National Institute of Statistics (INE, Instituto Nacional de Estadísticas by its acronym in Spanish) census (2011), the indigenous population in the Bolivarian Republic of Venezuela comprises 532,783 people that represent 2.3% of the national population. However, according to Brito (cited in Rivero, 2007) the Venezuelan indigenous population can, in actual fact, be around 900,000 or 1,000,000 inhabitants that might constitute 4% of the entire Venezuelan population these days. It is also estimated that 14% of the Venezuelan population that stay in rural areas come from an indigenous background (Arvelo, 1990). Though, it is also known that their life condition, as in the rest of countries in Latin America, is critical.

In Latin America, the aboriginal population have been particularly subject to marginalization, suffering the impact of various social and cultural unfairness issues. These imply racial discrimination, extreme poverty, isolation, limited access to basic services such as health, food and education, among other difficulties that have affected or threatened the well-being of those communities (Freitz, 2003; Biord, 2004; Freire, 2007; CISOR & CESAP, 2008; Torres, 2009). As a consequence, there have been some repercussions on the life and sleep quality of the aborigines.

Sleep is one of the different indicators used to measure the health condition of a person. It is thought that it has to do with the appropriate functioning of the human organism, specifically the immunological and the metabolic functions. It is also linked to important human processes such as learning, memory, homeostasis and other activities that are vital for the individual (Benington, 2000).

Sleep research on indigenes has worldwide been supported by the World Association of Sleep Medicine or WASM (2009) which is well known by some of their important emitted criteria. One of those remarkable cites say: "As long as it not raised awareness about the importance of stating the professional and social factors incidences as the main sources from where to initiate research, sleep disorders will not be prevented and medically treated in any country in the world" (p.1). It is thought that such factors represent a broader manifestation of a countless psychiatric and medical pathologies that affect the biopsychosocial development of the individual (Briones, Adams, Strauss, Rosenberg, Whalen & Carskadon, 2004, 2002, 1993; Roebuck, Winters & Redline 2004; Miró, Cano & Buela, 2005; Agudelo, 2008).

These affectations have a multifactorial etiology. Interestingly, it has been determined that the lack of sleep has the tendency to lead to serious public health problems (Partinem, 2005) that recurrently cause various illnesses and, both, work and traffic accidents in developmental countries (Gander, Marshall, Harris & Reid, 2005).

Sleep quality can be affected by physiological changes which are associated with the transition of stages of human life such as age (Paine, Gander & Travier, 2006; Uribe, 2002; Cazorla, 2001; Espinosa, 2000) and other physiological aspects attributed to gender, specifically the female one (Harvey, Stinson, Whitaker & Moskovitz, 2008). Although, there are other elements that may have some incidence on sleep quality such as habits, habitat or job occupations (Celade, 2001). These facts lead to think that differences in sleeping habits among cultures are key aspects (Adan, 1997) to bear in mind when measuring sleep quality, since every culture has distinctive habits that antagonizes one from the other causing dissimilar behavioral patterns as a result (Santamaria, 2004).

The architecture of sleep considerably changes from an ethnic group to another, originating important divergences among American Indians in relation to Whites, Blacks, Hispanics, or Asian Americans (Stepnowski, 2008, Redline, 2004). That is why ethnicity is considered an influential factor in sleep quality (Lichstein, Taylor & Bush, 2009) that has to be included within the purposes to be reached in the present study. Though, it is essential to bear in mind that the influence of ethnicity on sleep quality is more likely to coincide with adverse socio-environmental factors than racial genetic issues (Mezick, Mattew, Hall, Strollo & Buysse, 2008; Durrence, Lichstein, 2006; Moore, Adler, Williams, 2002).

It has been proven that, both, ethnicity and genetic factors have something to do with the risk of suffering from obstructive sleep apnea which alternate with variations in crane-facial structure, obesity, body fat distribution, socioeconomic status (See, Mensah, Olopade, 2006), among other signals that show an intrinsic relationship between the socioeconomic status and the sleep quality of the group of ethnic minorities in urban areas.

In New Zealand, the results of a study carried out across the country revealed that 72.5% of the sample of the population suffer insomnia symptoms. However, the Maori indigenous group (who represent 14% of the total population of this country and that come from a Polynesian background originally) apparently showed higher symptoms of insomnia than the non – Maori ones (Paine, Gander, Harris & Reid, 2004; 2005). In addition, it was found that a quarter of the adults in New Zealand suffer from chronic sleep difficulties and that insomnia seems to be the most relevant aspect connected to public health problems that, at the same time, is highly associated to ethnicity.

On the other hand, findings of a research study based on respiratory problems and the quality of sleep of Australian indigenous (Pierce, Antic, Chang, Howard, James, 2010) reported that the diseases and respiratory disorders that affect the sleep of this population were meaningfully connected with their mortality

rate. Likewise, it was found that the sleep interruption is a common tendency in these communities where the cultural practices normally include the play of music and noises made along the night.

Meanwhile, in Sápmi (an extension of territory that entails the north of Sweden, Norway, Finland, and Russia), the Sami, an Arctic indigenous ethnic group was studied in their natural habitat, proven to suffer from insomnia difficulty in low proportion. In the same way, the Sami indigenous group showed less dependence on hypnotics than the non-Sámi population that stay at the north of Norway (Bakken, Melhus & Lund, 2006).

In contrast, a study which intended to show the incidence of the sensitivity and the anxiety on either indigenous people or young Native Americans in Alaska revealed that mental disturbances such as seasonal mood swings, sleep disorders and anxiety were common present issues in both populations (Zvolenski, 2001).

In Taiwan, it was estimated that between 8% and 54% of the older aboriginal women have poor sleep quality that led to public health problems too (Su, 2004; Tsai, 2000; Blay, 2008; Yao, 2008, cited in Ke-HsinChueh, Mei-Sang Yang, Cheng-ShengChen, Shyam-Min Chiou, 2009). Additionally, a health policy analysis about the mental health of aboriginal people over 60 years old of this country explained that 70% of that population suffers from physical illnesses or disabilities that might directly be the cause of suicide of those who also suffer from serious sleep difficulties (Lai Hui-ling, 2002).

In Latin America, the first group of native Brazilians studied was Terena (Reimao, 1999; 2007). This group was specifically from the central region of the Mato Grosso state and is characterized by their peaceful behavior and hardworking agriculture skills. In this community, the incidence of insomnia was estimated of 4.6% and the use of hypnotic calculated around 1.5%, much lower than the one obtained from the urban populations. Nevertheless, it has to be born in mind that the Western medicine was not available in those villages at that time. So, when insomnia episodes took place, it was usually moderate in relation to the rest of the population. Moreover, it was diagnosed that the sleep duration was short and that the sleep latency lasted longer than in urban areas (Reimao, 2007). It seems that the Terena life routine favors their good sleep habits as they tend to keep regular sleeping and daytime hours. For example, the agricultural activity leads their life routine, the use of watch is nonexistent and their daily activities are conditioned by the sun light. Terena ethnic group makes the most of their time to achieve a sense of well-being but they do not deprive themselves from sleep.

In the same way, the results of a study carried out in Campo Grande, Brazil, reported that none of the inhabitants of the indigenous tribes of Bororó was afflicted by insomnia along the week prior the lead of the study (Reimao, 1999). Also, in the State of Mato Grosso Do Sul in Brazil, there are several cultural habits and traits that influence sleep habits of childhood and their parents or adult population. The area that the Terena native homes has, is very reduced. In the same place, they normally do their daily activities (cooking, eating, resting and spleeping).

These type of families have cosleeping (same place to sleep many people and sharing beds, light and also television), grandparents, parents and their sons sleep at the same bedroom, it can affect the sleep quality of childhood, but also, of their parents or adults, affected the normal performance on their jobs or daily tasks (Reimão et al., 1998).

Recent studies have corroborated that beyond physical aspects such as overweight, the work environment is reflected as a possible cause of the "worries" that generate problems in falling asleep or going back to sleep after waking up in the middle of the night in South American Indians (Camargo et al., 2020).

The reduction of the time available to sleep, artificial light, shift work has become a growing problem at the time of falling asleep in indigenous people (Andersen et al., 2010).

Based on what has been said before, it must be highlighted that cultures are not better or worse than others (Zuñiga, 1998). They simply differ from each other because they have to face different realities.

Consequently, in order to contextualize the sleep quality that characterized the indigenous of Venezuela, it has been considered the need to carry out the present study under conditions that fulfill the natural environment where they live.

To do this, it is important to remember that more than two dozen indigenous tribes can be found in the Bolivarian Republic of Venezuela. Some of them are the Akawayo, the Añu, the Northern Arawak, the Bari, the Chaima, the Eñapa, the Guajibo, the Jodi, the Kariña, the Guajiro, the Mapoyo, the Pemón, the Piaroa, the Warao, the Wayuu, the Yanomami, the Yavarana, the Yekuana, the Yeral, the Yurpa, the Southern Arawak, among others which, originally, settled down along the borders of the river flows. On the other hand, it is worth to say that some community programs have been created in order to support the integral health of these indigenous populations (Rivero, 2007; Sanchez, 2002).

Subsequently, it is necessary to raise awareness about the importance of sleep as a component. It is urged the study of it as a phenomenon and its behavioral patterns to incorporate it in the community prevention program plans, health promotion and therapies for individual rehabilitation.

In the same way, a research about sleep quality in Indigenous population in Australia (Torres Strait Islanders) shows that both, youth and adult people, can be affected in their "(…) widespread, and include disruptive behaviour, slowed social and academic development, accidents (e.g., motor vehicle and occupational), impaired performance at work, community and family dysfunction, and health conditions including depression, obesity, diabetes, cardiovascular disease, and mortality", these findings reveal the importance about quality sleep (Adams et al., 2018; Hamilton & Joosten, 2015; Woods et al., 2015; Yiallourou et al., 2020).

In addition, particularly in Adult American Indian Community (American Indians – Alaska Indians) were detected several disorders related to sleep quality, for instance: substance use disorders (alcohol dependence, cigarettes dependence, cannabis or other type of drug dependence) affective disorders, and anxiety

disorders, this type of disorders can affect not only the quality of sleep, but also work performance, family and personal relationships (Ehlers et al., 2017). In this research, the authors related that when aboriginal person grow up, they have more responsibilities, which is also reflected in the number of hours sleep.

Finally, it is thought that the findings obtained from a Venezuelan indigenous ethnic study like this will bring useful contributions to support the social action plans carry out by the Faculty of Health Science of Carabobo University in Venezuela and it will also help to improve the health and life quality programs that are being led for the sake of the wellbeing of this population. Additionally, it is expected that the theoretical findings that derived from this study enrich the lines of research of the Existential Pathology PhD of the Autonomous University of Madrid.

2. Sources and Methodology

The aim of this research pursues to reach social projection and, consequently, to obtain benefits that favors the conditions of the indigenous ethnic group. With this purpose in mind, it was necessary to adopt an innovative strategy in order to take advantage of the benefits that a traditional sleep quality measurement instrument such the Pittsburgh Sleep Quality Index (PSQI) questionnaire could provide. This American tool has proven to be effective and reliable when gathering the information required to meet research proposes. This tool, which consists of a self-administered questionnaire created to assess sleep quality, was administrated a month before its real application. This questionnaire contents twenty-four (24) questions, five (5) which have to be answered by a roommate and that do not have any score assigned, and nineteen (19) that have to be answered by the people interviewed (Rush, 2010).

Those nineteen (19) questions were arranged in such a way that they constituted seven (7) components. Each of those components was graded through a scale that went from 0 to 3. Its global punctuation allowed to reach a minimum of 0 and maximum of 21 points. It was necessary to establish a cut point of 5 which indicated that those scores equal or under 5 corresponded to good sleepers while those scores that exceeded 6 points indicated difficulties to have a peaceful sleep. The internal consistency of this questionnaire, measured by the Cronbach's coefficient, was 0.83 and its sensitivity marked 86.5%.

It was employed a Spanish PSQI version, translated and adapted by Royuela (1994; 1996; 1997) which maintains the same internal consistency, specificity and reliability of the original one. The components that formed part of the PSQI were:

- COMPONENT 1 (C1): Subjective sleep quality
- COMPONENT 2 (C2): Sleep latency
- COMPONENT 3 (C3): Sleep duration
- COMPONENT 4 (C4): Habitual sleep efficiency
- COMPONENT 5 (C5): Extrinsic disturbances

- COMPONENT 6 (C6): Use of hypnotic medication
- COMPONENT 7 (C7): Daytime dysfunction

However, there were some variations or linguistic adaptations of the Spanish version that had to be made. For example, in the opinion session, the choice "bastante mala" (fairly bad), that could have been interpreted as very bad since the word "bastante" in Venezuela is interpreted as "mucho" or "muy" (very), was expressed as "bad" or "fair" in English as choice in the corresponding scale. Likewise, the expression "bastante buena" (fairly good), which resembles the situation previously described but with opposite meaning, had to be substituted by the word "buena" or "good" in English as a choice on the corresponding scale.

In addition, a group of interviewers had to be created and trained to get familiarized with the aim of the study to conduct the survey in a correct way and, in some cases, it was necessary to get help from the local interpreters of indigenous tongues. Likewise, an amount of 184 surveys were not processed and excluded from the study because they did not meet the reliability criteria.

For population selection purposes, a series of aspects were considered:

1) the data about Venezuelan indigenous people was got from the National Institute of Statistics (Instituto Nacional de Estadísticas). According to Census (2001), they were made up by 532,783 people, representing 2.3% of the national population and distributed mostly in the south and west of the country;

2) Since there was a lack of previous studies to determine the size of the sample broken in proportions, a statistical formula to determine it was applied., where п = 50%, and the expected precision in the research or maximum error allowed is 5%. E= 5%.: $n = Z.п.(1-п) / E^2$, yielding 384.16 as result. Therefore, 385 people were used as sample, which allows a statistical significance of 95% confidence level;

3) the people interviewed were contacted in the place they live, previous informed consent of the participants and the University of Carabobo through the Faculty of Health Sciences that provided both human and economic support for the development of the research;

4) The limits of the geographic extension were figured out taking into consideration the Venezuelan regions with more amount of indigenous people. They were: Guayana Region which entails Amazonas and Bolívar states, Los Llanos region which includes Barinas and Apure states and the Occidental Region that involves Táchira and Zulia states (Geo Venezuela, 2007). Even though, such limits were intentionally figured out, it must be said that the population chosen had also already been included in a program called "Todos por la Vida" (All for life) led by the Faculty of Health Sciences of Carabobo University. Through this program the indigenous receive primary attention in terms of health service. Unfortunately, the difficult

access to isolated regions, that require long hours and days of journey to get into the wilderness, prevent these people from medical care service.

5)   Another important aspect considered was the fact that the population selected got to be individuals able to understand the idea of timetable or clock use, as well as the questionnaire questions.

To analyze the corpus, an analysis of frequency of variables was applied. Subsequently, the data obtained was analyzed based on each of the seven PSQI component. The purpose of this procedure was to get to know the behavior of the variables in relation to each component, using the SPSS 11 statistical package (Pardo, 2004). These results permit to do either descriptive or inferential analysis for the classification criteria. Using this distribution, it was possible to obtain percentages of the study variables in an independent way without the need to relate to each other. For this estimation, the term distribution or marginal percentage was used.

3. Conducting Research and Results

The administration of the PSQI results are showed in the following order: a) Descriptive assessment of the indigenous population which was studied in relation to certain proposed variables and, b) Results and analysis of the behavior of the seven PSQI components for each of the variables that have been proposed.

In the 385 indigenous sample surveyed between 2008 and 2010, it was seen a well-balanced distribution of indigenous according to sex. One hundred seventy-one (171), that represented 45% out of the total, were male, while two hundred and eleven (211), that represented 55%, corresponded to female.

It was also evidenced that the population was relatively young, more than 60% of the individuals were under 40 and almost 30% of that percentage ranged between 21 –30 years of age. Conversely, the lowest percentage, 7. 7%, comprised the older adult's range.

On the other hand, it must be highlighted that the occupations with more demand were: homemakers (38%), farmers (20%) and laborers (14%). They represented 75% of all the indigenous population who were subject of study.

3.1 Subjective Sleep Quality (C1)

Based on the thesis which states that remaining in their habitat, living in balance with nature and

making the most of what it provides are aspects that impact the sleep quality of the indigenous lives, 91.4% of the people surveyed considered that they have a "good" or "very good" subjective sleep quality. This opinion was mainly given by the housewives who are the most extensive occupational group (see Table 1).

As far as the occupation of the people concerns, it is evidenced that nurses are the group that reported the highest percentage of "very good" in sleep quality, obtaining 100% of the marginal percentage. They were followed by the students with 70.3% and housewives with 54%. Most of the laborers reported that their sleep quality is "fairly good" or "very good" obtaining a 45.3%. The teachers reported the same in a similar proportion.

Regarding unfavorable opinions, 20% of the group of indigenous that do not have a defined or permanent job claimed to have "fairly bad" or "bad" sleep quality; whereas 10% of housewives and around 7% of farmers and teachers surveyed expressed the same opinion.

The Chi-square test yields that there is a relationship between occupation and sleep quality with 95% of reliability, (p=0.030 < 0.05), while the Cramer V correlation coefficient indicates a moderate important relationship between both variables (Cramer V =0.166, p=0.030 < 0.05). This significant difference is mainly strengthened by the results obtained from the "bad" and "very bad" opinions

Table 1: Score distribution of the PSQI components according to the occupations of the indigenous population surveyed

COMPONENTS	Farmer	Housewife	Teacher	Nurse	Student	Laborer	Others
(C1)	0.61	0.6	0.64	0	0.3	0.57	0.84
(C2)	0.94	1.24	1.29	0	0.59	0.89	0.98
(C3)	0.78	0.69	1.25	0.38	0.49	0.79	1.4
(C4)	0.68	0.66	1.14	0.38	0.46	0.71	0.96
(C5)	1	1	1	1	1	1	1
(C6)	0.08	0.23	0.08	0	0.05	0.09	0.62
(C7)	1	1	0	0	1	1	1
(PSQI)	**5.09**	**5.42**	**5.4**	**1.76**	**3.89**	**5.05**	**6.8**

Source: Own elaboration (2018)

3.2 Sleep latency (C2)

Sleep latency was calculated by adding the time the person believes it takes him to fall asleep and the

number of times they have not been able to fall asleep during the first hour in bed. To do this, the following question was asked: How many minutes do you take to fall asleep every night? The result showed evidence of prevalence of ≤15 within most of the categories, with the exception of teachers who refer taking between 15 to 30 minutes to fall sleep.

Regarding the occupation variable, all nurses reported falling asleep within ≤ 15, a range that prevails in all occupations except in teachers, who expressed to fall asleep mainly between 15 and 30 minutes. Housewives present the highest percentage of those who need more than one hour to fall asleep. The group of

"others" obtained 24% in the range that require between 30 minutes to an hour to fall asleep.

Chi-square yields that there is a relationship between occupation and sleep latency with 95% of reliability, (p=0.018 < 0.05), while the Cramer V coefficient of correlation indicated a moderate important relationship between both variables (Cramer V =0.17, p=0.018 < 0.05).

3.3 Sleep Duration (C3)

It refers the number of hours the person believes that sleep. The question that was made was: How many hours do you believe you have slept? The results showed high evidence of the answer of > 7-hour sleep duration for people of every occupation. However, nurses were the ones that stood out with 87.5%, students followed them with 77%, and housewives with 67%. The marginal percentages verify the high incidence of the >7-hour answer in each occupation. Nurses and students stood out with 89% and 77%, respectively. Housewives followed them showing that they agreed with the same opinion in 67%.

Chi-square yields that there is a relationship between occupation and sleep duration with 95% of reliability, (p=0.007 < 0.05), while the Cramer V correlation coefficient indicated a moderate important relationship between both variables, (Cramer V =0.184, p=0.007 < 0.05).

3.4 Habitual Sleep Efficiency (C4)

Through this component it is intended to measure the coefficient between the length of time people believe they sleep and the result of the operation obtained from the length of time they actually report they have been on bed multiplied by 100. The questions were: How many hours do you usually sleep? and, related to this: What time do you go to sleep and what time do you get up?

Based on the results, it is noticed that there was evidence of percentages around 20% in all occupations that corresponded to an efficiency of sleep of <65%, except the students that showed such efficiency of only 8% of them. In the same way, it is observed that in 70% of cases, a habitual sleep efficiency of >85% prevailed, with the highest incidence in housewives with 27%, who represent the highest number of people surveyed in this occupation. Marginal percentages also evidence that within each occupation sleep efficiency is mostly >85%, in which nurses stand out with the greatest percentage.

The Chi-square determines that there is a relationship between occupations and sleep efficiency with a reliability of 95%, (p=0.014< 0.05), while the Cramer V coefficient of correlation indicated a slight relationship between both variables, (Cramer V =0.171, p=0.014 < 0.05).

3.5 Extrinsic Sleep Disturbance (C5)

This component involves the situations that make people wake up in the middle of the night. Among such situations are: the need to get up to go to the toilet, cough episodes, breathing difficulty, snoring, heat or cold sensations, nightmares and/or pains. When analyzing the marginal percentages of sleep disturbances by occupation, it was observed that students and nurses presented different pattern behavior that respond to the need of waking up in the middle of the night in relation with the people of other occupations. They do not exhibit this disturbance showing a significance difference of 65%. On the other hand, it was observed that the housewives, in a higher percentage, present that they wake up at night at least once a week. This is statistically significant based on Chi-square: ($p=0.001<0.005$).

Regarding the sleep disturbance caused by the need to go to the toilet, it is observed that it appears at least once a week and it is the one that affects the majority of people of all occupations: farmers, teachers, laborers, the ones that has been categorized as in "others" and housewives. In this sense, nurses reported that nightmares were the reason for them to wake up in the middle of the night at least twice a week. Meanwhile, students and the ones categorized in "others" said they wake up more frequently due to cold sensation during the night. As far as sleep disturbance due to heat sensation concerns, it was the laborers the ones that said they felt affected by it. They have the highest percentage of disturbances of this kind, showing presence from one to three times per week, with percentages between 20 and 25%.

3.6 Use of Hypnotic Medication (C6)

This component relates to any hypnotic medication used by the indigenous people to get to sleep. In order to elicit the answers, the indigenous were asked: How often have you had to take prescribed medications to sleep? There were various alternatives as answers admitted for this component since not only prescription from medical doctors was taken into account. It is important to remember that these populations lack general medical assistance and that specialized assistance is even much more inexistent. Thus, it was accepted any answer as a response, as for example, taking any potion or substance to favor sleep, whether it is recommended by shamans, relatives or neighbors.

Regarding the use of medication to sleep, according to the occupation performed by the population, it was found that a high percentage of indigenous (86%) expressed that have not required medication. In the same way, it was found that around 4% of the population did require it 2 or more than 3 times per week. The population that, possibly, presents sleep disturbances, mostly, corresponds to housewives and the ones categorized as "other".

The marginal distribution of the use of hypnotic medication, based on occupation, showed that the behavioral pattern of this component is similar to the

other variables of the study, given that most of the population expressed not to need medication to sleep. Interestingly, most of nurses expressed they do not need any medication at all. While the group of "other occupations" (non-classified) presents a decreasing use of medication that goes from one to three times a week.

According to Chi-square test, it can be seen that there is relationship between occupation and consumption of medication to sleep with reliability of 95% (p=0.000 < 0.05), whereas the Gamma correlation of coefficient indicates the presence of positive relationship (Gamma=0.302, p=0.003 <0.05). This significant difference is mainly emphasized by the results obtained in the opinion "three or more times" in which there were many empty cells in different levels of occupation.

3.7 Daytime Dysfunction (C7)

Daytime dysfunction component relates to the repercussions that some sleep disturbance may have on the daily routine. Two questions were used to measure it: (P7a): During the last month, have you had trouble to keep awake while performing habitual tasks? and (P7b): During the last month, have you had trouble to maintain the enthusiasm when performing your habitual tasks? The calculation for this component is done by adding the scores obtained in both questions: (P7a) + (P7b) (see Figure 1). The results yield that for the marginal distribution of daytime dysfunction according to occupation, the highest percentages corresponded to those who did not experience dysfunction. However, when analyzing the subjects who did experience dysfunction, there was a high percentage in almost all occupations, being nurses the ones with less incidence.

The Chi-square (p=0.466>0.05) showed that there was not a significant relationship between the occupation and daytime dysfunction variables.

After doing the descriptive analysis of the data obtained from the population surveyed, the **Pittsburgh Sleep Quality Index (PSQI) calculation was developed.** In order to get this calculation, the operations were performed following the instructions of the instrument. The frequencies were averaged and their equivalences were gotten in scores. Depending on the studied variable and their results, they were interpreted under the "5" cutpoint. Those that obtained a score of ≤ 5 points were rated as good sleepers. The scale of poor sleepers was classified in three degrees: "slight level", those who obtained a score between 6 and 8 points; "moderate", those who obtained a score between 9 and 11 points and "severe" > 11 points. These results are presented below.

In general terms, when the PSQI was analyzed in relation with the occupation or job performed by the Venezuelan indigenous people surveyed, it was found that farmers, who represented 20% of the population studied, obtained a PSQI of 5.09, which places them within the range of good sleepers, with the following characteristics:

- Among the group of farmers, it was found that regarding the perception about (C1), subjective sleep quality, the answer "very good" or "fairly good" was above 90% and its score was 0.61.

- In (C2), sleep latency, they obtained the highest score of the components studied in farmers with 0.94, represented in 19% of the respondents reporting having a sleep latency of over 1 hour.

- Component (C3), sleep duration, obtained a score of 0.78 resulting from 75% of the farmers reporting sleeping "less than 5 hours", while 14% reported sleeping between 6 and 7 horas and only 12% of them for more than 7 hours.

- Component (C4), sleep efficiency, in accordance with the above figures, yielded a score of 0.68. This component evidenced that almost 80% of the farmers have a sleep efficiency between < 65% and >85%, whereas only 17% report an efficiency of < 65%.

- Component (C5), extrinsic sleep disturbances, and component (C7), daytime dysfunction, were the components that had the highest weight on the PSQI score with 1 point each, while component (C6), use of hypnotic medication, had the lowest score with 0.08 points.

In this sense, the indigenous people who are devoted to agriculture consider their sleep quality as "very good" or "fairly good". Most of them have short sleep latency and only a small percentage report requiring more than one hour to fall asleep. Generally, they sleep between 5 and 6 hours, with a sleep efficiency of > 85%, and a high index of extrinsic disturbances and daytime dysfunction. They, also, do not use medication to sleep. However, the uprootedness condition of some farmers who have emigrated, their sense of lack of integration, certain coexistence problems or the lack of resources are the causes that may lead to sleep disorders which are usually the expression of psychological suffering, many times unknown (Segui, 2005; Ekblad, Kohn & Jansson, 1998).

On the other hand, the group of housewives obtained a PSQI of 5.42 which labels them as good sleepers. In this group of indigenous people, the components that had to do with such score behaved in the following manner:

- (C1), subjective sleep quality, as in the other groups, obtained 0.6, one of the lowest
  scores. This probably happened because, approximately, 90% of people considered that their subjective sleep quality is "very good" or "fairly good". Meanwhile, (C2), sleep latency, obtained the highest score, since almost 40% of them stated that required 30 minutes or more than 1 hour to fall asleep.

- Components (C3) and (C4) obtained scores of 0.66 and 0.69, respectively and both maintained a steady trend. Meanwhile, it was evidenced that the highest increase in terms of score was on (C5), extrinsic disturbances, and

(C7), daytime dysfunction, presenting 1 point each. Though, it was seen a big drop in (C6), use of hypnotic medication, with 0.23 points.

Thus, it can be claimed that the majority of housewives consider their sleep quality to be "very good" or "fairly good"; they showed to have short sleep latency, but it was also seen that 40% of them present a latency between 30 minutes and more than 1 hour to fall asleep. Generally, they sleep between 5 and 6 hours with a sleep efficiency of > 85%. Besides, it has been observed that there is a high index of extrinsic disturbances and daytime dysfunction among them. They also expressed that they do not require medication to sleep.

In urban populations, the fulltime domestic work is conceived as a task that implies more autonomy as the activities are characterized for being more like a routine, with low time pressure and less responsibility in terms of issues out of control. This description has similarities with the duties that the indigenous housewives normally perform.

However, it is also taken in consideration that immigrant women are employed as housekeepers who usually work in loneliness and isolation, following rules and assuming behavioral patterns that they are nor normally used to (Sanz & Torres, 2005). In urban areas, almost 33% of this population experience serious sleep disorders, fatigue and irritability due to the noise contamination produced by the human activities and the noise of traffic of those communities (Habibulah, 2007).

The group of teachers obtained a PSQI of 5.40 points showing the following particularities:

- (C1), sleep duration, obtained 0.64 points because 93% of them reported to have "very good" or "fairly good" sleep quality and only 7% said to have "fairly bad" sleep quality. Regarding (C2), (C3), (C4) and (C5), they maintained high scores above 1 point, while components (C6) and (C7) presented a trend toward zero points.
- The group of nurses obtained the lowest score in relation to the PSQI of all occupations, with a score of 1.76, so they can be considered the best sleepers of all the population studied. It must be highlighted that the only two components that participated in this index were (C3), sleep duration, and (C4), habitual sleep efficiency, with 0.38 points each. The rest of the components obtained a score of 0.
  The group of students obtained 3.89 as score in the PSQI. The evidences showed that:

- A quite steady trend towards low values of the first four components with two increases in component (C5),
- Extrinsic sleep disturbances in component (C7), day time dysfunction.
- A very low (C6) component, hypnotic medication.

In the group of laborers, the PSQI score was 5.05. The aspects that can be highlighted are:

- All component scores were lower than or equal to 1. The category of others, as non-classified jobs, obtained a PSQI of 6.80, which places them within the range of poor sleepers at a slight level.

- A quite steady trend was also evidenced in this group with slight increases in the values of components (C1) (C2), (C4), (C5) and (C7), presenting only one component, (C3), sleep duration, tending to go up, which is counterbalanced by (C6) component, use of hypnotic medication, as very low.

To sum up, in correspondence with the job or occupation that is performed by the indigenous population surveyed, it can be said that it is the group of nurses the one that has the best sleep quality of all. This group is closely followed by the students. There seem to be a tie between farmers and laborer while housewives and teachers occupy the last place, showing a good balance among them.

It is observed that those who perform occasional, temporary or non-classified jobs are the ones that show poor sleep quality. Nevertheless, there seem to be a connection between occupation and sleep quality. Those links establish that work overload end up in poor sleep quality, with longer latency and daytime dysfunction, according to the epidemiological studies conducted on American (Knudsen & Ducharme, 2007), German (Vestrier, 2008), Australian (Johnston, Astbury, Bruck & Kennedy, 2007), Japanese (Kim, Uchiyama, Okawa, Liu, & Ogihara, 2000; Doi, Minowa, Okawa, Uchiyama, 2000-2003) and British populations (Arber, Hislop, Bote, & Meadows, 2007).

Furthermore, regarding the type of job, it was detected that those occupations that require performing repetitive tasks, were associated with people who suffer of more days of insomnia, exhibiting a connection among the factors that cause work stress, sleep quality and worker health state effects, forming a triangle in which the factors mutually interact, affecting each other (Oginska & Pokorski, 2006).

A different situation is observed regarding laborers and teachers who do maintain a schedule and a daily work commitment. Hence, it is claim that the mere fact of having a job helps a person to display better-quality sleep-in comparison with those unemployed people or those with no stable job (Arber, Hislop, Bote & Meadows, 2007).

That is why, people who are under a piece rate work condition or that does temporarily work have 40% greater possibility of having bad quality sleep. In this respect, there is coincidence with what has been expressed by the indigenous population. Those who reported not having a stable job or a classifiable one were the only ones who showed to be bad sleepers.

Job satisfaction also plays an important role in sleep quality. According to the previous research works, unhappy workers present sleep disorders in 33% of

the cases in relation to 18% of satisfied workers, (Arber, Hislop, Bote & Meadows, 2007). In the case of the Venezuelan indigenous population, housewives and farmers, who represent more than 50% of the population surveyed, expressed to do their daily working tasks with satisfaction.

In urban populations there is another interesting finding related to the fact that people with a higher level of education have better sleep quality. That is, professionals possibly, have a better sleep quality than the working class. Seemingly, in the case of Venezuelan indigenous ethnic groups, the nurses, who are the ones recognized as having a higher educational level in relation with the average population, obtained the best scores on the PSQI concerning sleep quality variable.

According to an Australian study about quality sleep, indigenous population have a specific condition different likely to non-indigenous population, for instance they live in remoteness places that makes it difficult for them to travel, pay for a special sleep treatment to solve sleep disorders, it can affect the engagement for a treatment and also, it can affect directly their daily activities (Hamilton & Joosten, 2015).

In contrast, worldwide findings regarding the nurse profession in urban population are highly opposed to the results obtained in the indigenous ethnic groups studied (Winwood, 2006; Kunter, 2007; Moon, 2009). As, it is known, sleep disorders in Australian nurses coincide with sleep disorders due to work shift (Akerstedt, 2003), and work pressures. Different from nurses of urban hospital centers who reported suffering frequent sleep disorders, probably, due to repetitive exposure to psychosocial stress combined with the inadequate work schedules of shift work, socio environmental risk factors, and work interference in family life (Hughes, 2004; Rogers, 2003 –cited in Hasson, Gustavsson, 2010).

Another interesting aspect is that some of the occupations studied tend to group each other as follows: students and teachers are grouped with housewives while farmers group with laborers as good sleepers.

Unlike, some French studies revealed that students from Lyon (De Alberto, 1992 –cited in Serfaty, Masautis, Foglia, 2004-), showed that 13% of males and 17% of females tend to suffer sleep disorders and, even, 10% of them said that had used medication to sleep. Meanwhile, in Paris, it was detected that 21% of them presented sleep disorders and 4% expressed that had used medication to sleep (Janson, 1995). In Warsaw, it was found that 21% of young people suffered moderate sleep disorders and 7% expressed suffering severe sleep disorders (Zieliski, 1998 –cited in Serfaty, cols. 2004).

In an Australian research about sleep disorders, they related that aboriginal patients have a specific sleep disorder, it can be difficult to treat because there are several barriers like to live in remote places, language and education to understand medical terms to accept a sleep treatment to improve their quality sleep and also, to enhance a better job performance (Woods et al., 2015).

The population studied in this research differs substantially from those data, as the results revealed that students from indigenous ethnic groups scored as second in the scale after nurses as good sleepers.

4. Conclusion

The analysis conducted evidences that the sleep quality of Venezuelan indigenous ethnic groups can be characterized by seven (7) PSQI components. Such analysis is based on the behavioral patterns of those components and their influence on the gotten result, as it can be seen bellow:

- Subjective sleep quality (C1): Regarding the occupation performed by the people surveyed, it can be seen that the favorable opinion of "very good or fairly good" sleep quality is mostly expressed by nurses and students with a 100% percentage; this result is followed by laborers with 98%, teachers with 93%, closely followed by farmers with 92%, housewives with 89.4% and, indigenous people belonging to the category of "others", who have non-classified and temporary occupations, with the lowest percentage, obtaining 80% of favorable opinion. In regard to unfavorable opinion about the quality of their sleep, the highest percentage was identified within the group of "others" with 20%, followed by 10% in the group of housewives, 8% and 7% of farmers and teachers respectively, and only 2% of laborers.

- Sleep latency (C2): As regards the occupation variable, it is evidenced that all the nurses report they fall asleep within ≤ 15 minutes, a prevailing range in all occupations except in teachers. In this case, the range that fall asleep between 15 and 30 minutes prevail. It must be noted that the highest percentage of people who report requiring more than 1 hour to fall asleep is found in the group of housewives. Within then group of other occupations, 24% of the people require between 30 minutes and 1 hour to fall asleep.

- Sleep duration (C3)**:** Regarding occupation, it is identified that the marginal percentages reproduce the high incidence of the sleep duration range of > 7 hours in each one of the occupations, with nurses reporting 89%, students 77% and housewives 67%.

- Habitual sleep efficiency (C4): With respect to occupation, the marginal percentages also evidence that within each occupation the majority present a sleep efficiency of >85%, in which case nurses stand out with the highest percentage. Percentages around 20% in almost all occupations in relation to a sleep efficiency of < 65% were observed, with the exception of students, of whom only 8% reported such efficiency.

- Extrinsic sleep disturbances (C5): In the population surveyed, it is observed that the majority of population do not report to have sleep disturbances. Regarding occupation, a high trend in the score of 0 points can be seen in all (C5) categories, showing that nurses and students prevail over the rest of occupations. On the other hand, the score of 3 presented the lowest percentages. As regards disturbance caused by the need to go to the bathroom, the students behave

differently from the rest of occupations, showing that 70% of individuals never waking up to go to the bathroom. The members of the non-classified categories (others) presented the highest percentages in relation to waking up once a week, maintaining moderately high percentages in the categories of 2 and 3 points, as well as housewives.

- Hypnotic medication use (C6): Regarding occupation, it is observed that nurses do not use any medication. The group of "other occupations" stands out as it shows greater use of medication to sleep and presents a decreasing medication use between less than once a week to three times a week. Likewise, 35% of them said that had needed to use it between less than once a week and twice a week, and 4% expressed to use it more than three times a week.

- Daytime dysfunction (C7). Regarding occupation, it is evidenced people report the highest percentages concerning the statement that do not experience any daytime dysfunction. It was also seen that around 36% suffers daytime dysfunction at least once a week in almost all occupations. Interestingly, it is not seen any incidence in nurses.

As a matter of final comment, it can be said that it was observed that the Venezuelan indigenous people included in this study belong to a population segment adapted to rural environments, they are able to understand timetables, to communicate in their native tongue and in Spanish, they have partially changed their cultural habits, a minority of them have gone through levels of training to become teachers or nurse assistants, and some others are students.

It was proven the hypothesis that states that indigenous people enjoy good sleep quality because there is not presence of urban pollution factors such as noise, electricity, technology or work pressures, among others aspects that normally impact sleep quality in the natural environments where they inhabit. Indigenous people enjoy good sleep quality that is conditioned by the natural variations of gender and life stages or affected by external factors that typically have to do with the occupational performance or geo-climatic habitat.

According to the literature review and its findings, the quality sleep can affect performance in all the ages in aboriginal people, children, youth people and the most important impact, in occupational performance in adult indigenous people.

Finally, in this research it was intended to characterize the sleep quality of Venezuelan indigenous people, considering that the natural environment they inhabit is free from urban pupation agents such as noise, electric light, technology, work pressures, strict schedules, among other aspects which lead to generate high stress levels and directly or indirectly impact on their occupational performance. Thus, the results indicated that the Venezuela´s indigenous population included in the study belongs to a population segment adapted to rural environments, who are able to understand timetables, communicate in their tongue as well as in Spanish, have partially changed their cultural habits, a minority have a level of training as teachers or nurse assistants and others are students. Worldwide, studies of this kind have been oriented to analyze the impact of indigenous emigration from their

places of origin to urban areas or, on the contrary, to determine the detection of sleep disorders, in those cases ethnicity represents a fundamental pattern of discussion as it definitely has influence on sleep quality.

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