139 - INSTRUMENTS OF SLEEP EVALUATION IN CHILDHOOD.BRAZILIAN LITERATURE'S REVIEW

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INTRODUCTION

Sleep is a physiological manifestation of primary importance for the health of an individual, adult or child. Sleep is considered as a reversible behavioral state that modifies the consciousness level and the external and internal stimuli. It varies throughout human development in its duration, distribution of stages and circadian rhythm (PESSOA, 2013; SOARES et al, 2010).

In the first year of life the characteristics of the sleep-wake cycle express the maturation of the Central Nervous System (CNS). In newborns, the alternation between wakefulness and sleep is little stable. We can notice uncertain schedules of beginning and ending of sleep, which gradually assume a circadian rhythm. Active sleep is considered the precursor of REM (Rapid Eye Movement) sleep while the quiet sleep is the one of NREM (Non Rapid Eye Movement) sleep. From 2 to 3 months of age, the circadian rhythm is established and the child starts to present reduction of daytime sleep and consolidation of the sleep hours at night. The architecture of sleep suffers important modifications from the third month and on. The period of sleep between the third and sixth month of life lasts uninterruptedly between 200 minutes and six hours respectively (ARAÚJO, 2012).

Between the baby's 9th and 12th month, the WSC (Wake-sleep cycle) starts to synchronize with the environmental cycles. The child starts to have long nights' sleep, with 10 hours' length, and to have other periods of sleep during the morning and the afternoon -which last from two to three hours and tend to disappear over time. During this phase the wakefulness period initiates and, on the 12th month, the consolidation of nocturnal sleep occurs though the daytime naps continue (ARAÚJO, 2012).

From the baby's 2nd year and on, nocturnal sleep is combined with morning naps of about 2 hours a day. The gradual disappearance of naps in different age groups was analyzed by Webb (1989) apudAraújo (2012). They concluded that there is a tendency to the decrease in the number of naps during growth, without however, shortening them.

At 5 years old, a decrease in the number and length of the children's naps in the afternoon happens. In this phase, the stages of REM and NREM sleep change and occur for a long nocturnal period that varies from 10 to 12 hours. We expect that the child have already reached the adult percentage of REM sleep, which is around 25% of sleeping time (ARAÚJO, 2012).

From the age of five and on, nocturnal sleep must be already completely consolidated, nocturnal awakes or necessity of daytime naps don't occur anymore (ARAÚJO, 2012).

According to Araújo (2012), the problems related to sleep are frequent during childhood. They are influenced by biological, psychological, cultural, social and familiar factors.

Sleep disorders take place in children of all age groups. We estimate that more than 30% of children present sleep disorders in some period of their development (PERSON, 2013). The human development, process of biological and psychological evolutiontowards autonomy, involves a succession of stages done by the acquisition of cognitive, behavioral and physical functions from the first years of life to the end of childhood (VENTURIERI, COELHO, ROCHA, SCHLINDWEIN-ZANINI, 2014).

The presence of alteration in sleep can change behavior, neuron motor development, cognition and also the child's relationship with their family. Its recognition is thus important for its adjusted clinical handling (ARAÚJO, 2012). The differential diagnosis of sleep disorders and neuropsychological alterations are therefore important. Schlindwein-Zanini, Portuguez and Costa (2007) also mention, for example, that the Frontal Lobe Epilepsy- FLE can be confused with a sleep disorder or a psychiatric problem because it isn't always well understood and recognized by the health professionals dedicated to children.

Healthy childrenwho have problems related to sleep, can reveal symptoms as: mood and emotional state changes, behavior problems cognitive difficulty (SADEH, 2007 apud ARAÚJO, 2013).

This study aims to verify the instruments of evaluation of sleep in childhood.

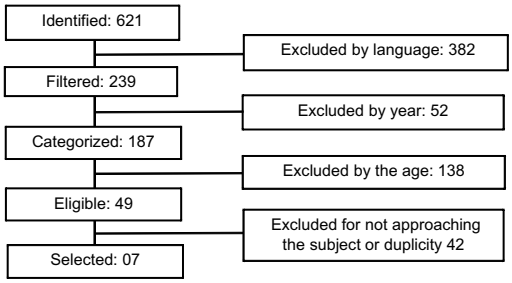
METHOD

We made a comparative study by doing a bibliographical review of instruments of evaluation of sleep disorders in childhood. Between March and April 2015 we tracked studies indexed in Scielo and Lilacs electronic databases through these key-words: “sleep”, “questionnaire” and “child”. We decided using studies involving children, published in Brazil, in Portuguese, from 2010, as inclusion criteria.

RESULTS AND DISCUSSION

We found 621 studies. In the Scielo database we discovered 191 articles from which only 1 attained the inclusion criteria. In the Lilacs database, we found 430 articles, from which 08 matched the inclusion criteria. Figure 1 shows the flow diagram of the studies found.

Figure 1 - Flow diagram of the studies found.



We considered 07 studies that approached all the inclusion criteria, from which 1 doctoral thesis and 6 scientific articles for this bibliographical review. The studies were carefully analyzed, with the intention of approaching the main data and information to write this review. Table 1 shows the main characteristics of the studies selected for this review.

Table 1 - Analysis of selected articles.

AUTHOR YEAR	OBJECTIVES	SAMPLE	INSTRUM.	RESULTS	CONCLUSION
Araújo, 2012	SD prevalence; Characteristic of SP.	60 (3-5 years old): 3 groups (G1: with SD; G2: without SD and G3: control)	QRL	TST = 10 - 11 hours EMS (48.5%), S (35.8%), DS (33.2%) and NE (21.9%).	Appropriate instrument to evaluate the presence of SD in the children population.
Fernandes et al, 2013	OSA-18 Portuguese version in the OV.	51 children caretakers (2-12 years old)	OSA-18-pv.	OSA-18-pv, impact of the OSAS in QL is Low (14 = 28%), Average (22= 43%) and High (15= 29%).	Validation of the OSA-18-pv. Impact in the QL in children with OSAS.
Gamallo et al, 2012	Measure the HRQL and the FCHP.	Kindergarten (3-5 years old) and Elementary School (6-11 years old).	SDSB/C PedsQL 4.0	Average score SDSB/C = 45.8± 12.2 (from 28 to 98), average of ES= 9.4± 3.7 (from 5 to 22) and Average of BA = 4.9± 2.6 (from 3 to 15).	Positive between the parents' SQ, HRQL and their children's sleep.
Gomes et al, 2012	To evaluate the LQ of children with SDB; to compare children with OSAS and PS; and to identify the OSA-18 elements.	59 participated, average of age of 6.7 ± 2.26 years.	OSA-18	CW (21.8±4.25), SP (18,8±5,19), PP (17,3±5,0). Small: 6 (10.2%), Moderate: 33 (55.9%) and High: 20 (33.9%). PS- 44 (74.6%), OSAS- 15 (25.6%).	SDB modifies the QL. Most compromised elements of the OSA-18 were: CW, PS, PP. OSAS has the PP element more affected by PS.
Silva et al, 2013	To validate the VP of the CSHQ-PT	500 questionnaires (2-10 years old). 370 (74% validated). 55 C were excluded and 315 accepted.	CSHQ-PV	Scale ranged from 0.44 to 0.74 in sub-scales. Trustworthiness varied from 0.59 to 0.85. The data wasn't compatible with the original structure of 8 elements.	CSHQ-PT presented properties comparable to other versions for sleep problems screening.
Soares et al, 2010	To evaluate the perception of the parents or caregivers concerning the existence of eventual SD symptoms.	65 parents (2-12 years old).	SHQ (37 questions)	35% presented some SDB and SD. Incidence of sleeplessness.	The parents are unaware of what are SD.

Key to table: SD - Sleep Disorders; SP Sleep Pattern; QRL- QRL- Reimão-Lefrève Child Sleep Questionnaire; TST - Total Sleep Time; EMS - Excessive Movement in Sleep; S - Snore; DS - Daytime Sleepiness; NI - Nocturnal Enuresis; OSA-18 - Obstructive Sleep Apnea-18 ; OV - Original Version; OSAS - Obstructive Sleep Apnea Syndrome ; QL- Quality of life; QVRS- Health-Related Quality of Life ; FCHP - fatigue in children and health professionals; ES - Excessive Sleepiness; BA Breathing Alterations; CW – Carregiver's Worry ; SP -Sleep Disturbance; PP- Physical Pain; PS- Primary Snoring; SDSB/C Sleep Disorder Scale for Babies/Children; SDB - Sleep Disordered Breathing; SQ- Sleep Quality; VP- Validation in Portuguese; CSHQ-PT- Children's Sleep Habits Questionnaire; SHQ Sleep Habits Questionnaire .

The QRL, pioneer in Brazil, was conceived between the years of 1980 and 1983, from the need to attain a simple resource to base the sleep disorders' diagnosis. It was aimed to characterize the sleep pattern and habits of a child population. The QRL results showed considerable data about disorders and parasomnias, presenting the following prevalence: excessive nocturnal movement (48.5%), daytime sleepiness (27.2%), nocturne enuresis (21.9%), nocturnal snoring (20.5%), bruxism (11.1%), daytime snoring (9.4%) and night terror (7.2%). The questionnaire is appropriate to evaluate sleep disorders in the child population (ARAÚJO, 2012).

Franco et al (2000) apudFernandes et al (2013) developed a questionnaire to evaluate the impact of the OSAS in the child and their caregivers based in 18 questions. This instrument, denominated OSA-18, inquires the caregivers about five elements: sleep disorders, physical symptoms, emotional symptoms, daytime function and concerns from the caregiver; each item has a score in an ordinal scale of 7 points (from 1- “never” to 7- “always”). The Obstructive Sleep Apnea Syndrome-18 questionnaire: Portuguese version (OSA-18-pv), demonstrated to be simple and quick to perform, it can be used in the clinical context or research studies. The reliability analysis demonstrated a Cronbach score $\alpha = 0.821$, which confirms a high consistency. Based on the OSA-18 result, the impact of OSAS in the quality of life is low in 14 cases (28%), moderate in 22 (43%) and high in 15 children (29%) (FERNANDES et al, 2013).

Gomes et al (2012) used OSA-18 “to evaluate the quality of life of children with sleep disordered breathing” (SDB), to compare children with obstructive sleep apnea syndrome (OSAS) and primary snoring (PS) and to identify which of the OSA-18 elements are the most compromised. The results found were satisfactory because the “average score of OSA-18 was of 77.9 ± 13.22 and the elements affected were: “worry of the caregivers” (21.8 ± 4.25), “sleep disorders” (18.8 ± 5.19), “physical pain” (17.3 ± 5.0). The impact was small in six children (10.2%), moderate in 33 (55.9%) and high in 20 (33.9%). PS was found in 44 children (74.6%), ASOS in 15 (25.6%). ASOS has higher score in the “physical pain” element ($p = 0.04$)”. Through the analysis of the OSA-18, we observed that “sleep disordered breathing" in the childhood compromise the quality of life. The most exposed elements of the OSA-18 were: “worry of caregivers”, “sleep disorders” and “physical pain”. The element "physical pain" is more affected than "primary snoring" in the OSAS (GOMES et al, 2012). The OSA-18 questionnaire demonstrates to be simple and

quick to perform. It can be used in the clinical context or research studies (FERNANDES et al, 2013 and GOMES et al, 2012).

The study of Gamallo et al (2012) used the SDSB/C, composed of 26 items, with scores of 1 to 5 in agreement to the frequency of a sleep characteristic. The final score varies from 26 to 130, and the higher scores indicate a poor quality of sleep. The score of this questionnaire is subdivided in three factors: total sleep (variation of 26 to 130), excessive daytime sleepiness (the scores' sum of the items 22, 23, 24, 25 and 26, with variation of 5 to 25) and breathing alterations (the scores' sum of the items 13, 14 and 15, with variation of 3 to 15). About the children's sleep, the total SDSB/C average score was of 45.8 ± 12.2 (variation of 28 to 98), the average of the SDSB/C excessive sleepiness was of 9.4 ± 3.7 (variation of 5 to 22) and the average of the SDSB/C breathing alterations was of 4.9 ± 2.6 (variation of 3 to 15). (Gamallo et al, 2012)

The Children's Sleep Habits Questionnaire (CSHQ) is a retrospective questionnaire answered by the parents, developed in the United States to investigate the sleep behavior in school-age children. The questions were selected to include the presentations of symptoms of the most common sleep disorders in children, according to International Classification of Sleep Disorders. Of the 45 initial items, 33 were conceptually grouped in eight sub-scales, reflecting the following sleep elements: Resistance in Going to Bed; Beginning of Sleep; Duration of Sleep; Sleep Anxiety; Nocturnal awakeness; Parasomnias; Sleep Disordered Breathing; and Daytime Sleepiness (SILVA et al, 2013). The Children's Sleep Habits Questionnaire (CSHQ-PT) also showed a convergent validity with the general evaluation of sleep difficulties by the parents, since the children identified presenting “Problems to sleep” presented higher total scores. The scale varied from 0.44 to 0.74 in the sub-scales and the reliability oscillated from 0.59 to 0.85. Because of this, the data wasn't compatible with the original structure of 8 elements (SILVA et al, 2013).

The SHQ is composed of 37 questions with open and closed questions, divided in five domains, namely: house, family, health, sleep and daily activity of the child. Of the children who presented any sleep disorder (20%), 43% had sleeplessness. On the other hand, 13 (16%) of those analyzed with snoring presented this disorder. About the bruxism, it was verified that 22 children (17%) presented this disorder. Thus, based on the answers, this research's results showed that 35% of the sample studied presented some type of breathing illness (SOARES et al, 2010).

CONCLUSION

Sleep has a vital importance for human beings, playing different functions, as the restoration of a wary organism, body thermoregulation, rest, memory consolidation and learning, among others. The appropriate evaluation of sleep disorders is necessary, and includes anamnesis, use of the sleep diary, use of standard instruments and structuralized questionnaires, in addition to examinations, as the polissonography; all of them involves a multidisciplinary team.

Concerning the instruments mentioned, the studies demonstrated their effectiveness as tools to analyze and to evaluate sleep disorders in the children population. It has a low cost, it is easily applied and it is considerably reliable. These instruments are capable to measure and to evaluate the subject here considered. To mention: The QRL scale evaluates with reliability the presence of a sleep disorder in the child population. The OSA-18-pv questionnaire evaluates the impact in the quality of life of the children with OSAS. The SDSB/C and PedsQL 4,0 measures the HRQL of the children; the CSHQ-PT identifies problems to sleep and the SHQ is used in eventual symptoms of sleep disorders.

More scientific research in the field of sleep disorders in childhood is necessary, its goal would be development knowledge, providing data for better evaluation and, consequently, correct diagnostic related to the data of the questionnaires applied.

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INSTRUMENTS OF SLEEP EVALUATION IN CHILDHOOD: BRAZILIAN LITERATURE'S REVIEW.

ABSTRACT

Introduction: in the child population, the presence of alterations in the sleep pattern is influenced by several factors. They can influence the performance of neuro-psychomotor development and in the quality of life. Objective: to verify the instruments of evaluation of sleep in childhood used in Brazil. Method: we searched studies in the Scielo and Lilacs electronic databases from March to April 2015. The inclusion criteria were the studies published from 2010 and on, in Brazil, in Portuguese and that used instruments of evaluation of sleep in childhood. Results: 621 studies were found initially, however only 07 met all the inclusion criteria, being thus selected. Conclusion: the studies showed the effectiveness of the instruments to analyze and to evaluate sleep disorders in the chil population. It has a low cost, it is easily applied and it is considerably reliable.

KEYWORDS “sleep”, “questionnaire” and “child”.

INSTRUMENTS D'ÉVALUATION DU SOMMEIL PENDANT L'ENFANCE: REVUE DE LITTÉRATURE BRÉSILIENNE.

RÉSUMÉ

Introduction: Dans la population infantile, les troubles du sommeil sont provoqués par divers facteurs, ils peuvent avoir une influence sur la performance du développement neuropsychomoteur et sur la qualité de vie.Objectif: vérifier les éléments d'évaluation du sommeil pendant l'enfance, utilisés au Brésil. Méthode: Ont été recherchées des études dans les bases de données électroniques SCIELO et LILACS sur les mois de mars et avril 2015, ayant comme critère d'inclusion les études publiées à partir de 2010, au Brésil en langue portugaise et qui utilisent les instruments d'évaluation du sommeil pendant l'enfance. Résultats : Ont été initialement trouvées 621 études, cependant seulement 7 correspondaient aux critères d'inclusion, étant ainsi sélectionnées. Conclusion: les études ont démontré l'efficacité des instruments comme forme d'analyse et d'évaluation des troubles du sommeil dans la population infantile, ayant un coût bas, une application facile et étant fiables.

MOTS-CLÉS: “sommeil”, “questionnaire” et “enfant”.

INSTRUMENTOS DE EVALUACIÓN DE SUEÑO EM LA INFANCIA: REVISIÓN DE LA LITERATURA BRASILEÑA.

RESUMEN

Introducción: en la población infantil, la presencia de alteraciones en el padrón de sueño es influenciada por diversos factores, pueden influenciar en el desempeño del desarrollo neuropsicomotor, y en la calidad de vida. Objetivo: verificar los instrumentos de evaluación del sueño en la infancia, utilizados en el Brasil. Método: fueron investigados estudios en las bases de datos electrónicas Scielo y Lilacs en el período de marzo y abril de 2015, teniendo como criterio de inclusión estudios publicados a partir de 2010, en el Brasil con idioma portugués y que utilizasen instrumentos de evaluación del sueño en la infancia. Resultados: fueron encontrados inicialmente 621 estudios, sin embargo, sólo 07 respondieron a todos los criterios de inclusión, siendo así seleccionados. Conclusión: los estudios demostraron la eficacia de los instrumentos como forma de analizar y evaluar los disturbios del sueño en la población infantil, siendo de bajo costo, fácil aplicación y confiabilidad.

PALABRAS CLAVE: “sueño”, “cuestionario” y “niño”.

INSTRUMENTOS DE AVALIAÇÃO DO SONO NA INFÂNCIA: REVISÃO DA LITERATURA BRASILEIRA.

RESUMO

Introdução: na população infantil, a presença de alterações no padrão do sono é influenciada por diversos fatores, podem influenciar no desempenho do desenvolvimento neuropsicomotor e na qualidade de vida. Objetivo: verificar os instrumentos de avaliação do sono na infância, utilizados no Brasil. Método: foram pesquisados estudos nas bases de dados eletrônicas Scielo e Lilacs no período de março e abril de 2015, tendo como critério de inclusão estudos pulicados a partir de 2010, no Brasil com idioma português e que utilizassem instrumentos de avaliação do sono na infância. Resultados: foram encontrados inicialmente 621 estudos, porém apenas 07 atenderam a todos os critérios de inclusão, sendo assim selecionados. Conclusão: os estudos demostraram a eficácia dos instrumentos como forma de analisar e avaliar os distúrbios do sono na população infantil, sendo de baixo custo, fácil aplicação e confiabilidade.

PALAVRAS-CHAVE: “sono”, “questionário” e “criança”.