PATERNAL SHIFT-WORKING AND SLEEP DISORDERS IN CHILDREN AFFECTED BY PRIMARY NOCTURNAL ENURESIS

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Introduction

Primary monosymptomatic nocturnal enuresis (PMNE) is a common problem in childhood and studies about the sleep habits of affected children are not conclusive. Work-family conflict (WFC) results from the incompatibility between family demands and business/workplace needs. WFC can impact parental quality with many consequences on children health. Aim of study is assessing the prevalence of sleep disturbances in enuretic children, sons of work-shifters.

RESULTS

To evaluate statically differences among mean values of two samples, the Chi-square test was performed. Logistic regression was assessed to verify the role of paternal shift-working as risk factor for sleep disorders. p≤0.05. All sleep disturbances categories were more prevalent in PMNE children sons of shift-workers than control group (Chi-square= 43.926; p<0.001); particularly 82.5% of PMNE vs. 11.76% of TDC show pathological scores for SBD category (Chi-square = 145.592; p<0.001; OR = 35.35; IC95% = 17.71-70.57); 61.25% vs 9.41% for SWTD (Chi-square = 93; p < 0.001; OR = 15.213; IC95% = 8.21-28.15); 57.5% vs 9.41% for DA (Chi-square = 82.31; p < 0.001; OR = 13.02; IC95% = 7.06-23.98); 37.5% vs 6.67% for DIMS (Chi-square = 45.476; p < 0.001; OR = 8.4; IC95% = 4.3-16.39); 26.25% vs 5.88% for SHY (Chi-square = 24.257; p < 0.001; OR = 5.69; IC95% = 2.76-11.71) and 25%c vs 5.49% for DOES (Chi-square = 23.323; p < 0.001; OR = 5.73; IC95% = 2.73-12.01).

Conclusions: Our findings suggest that paternal shift-working plus PMNE children may be a relevant factor affecting sleep quality in affected children.

Keywords: Primary nocturnal enuresis, paternal shift-working, SDSC.

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ABSTRACT

Objectives: Primary monosymptomatic nocturnal enuresis (PMNE) is a common problem in childhood and studies about the sleep habits of affected children are not conclusive. Work-family conflict (WFC) results from the incompatibility between family demands and business/workplace needs. WFC can impact parental quality with many consequences on children health. Aim of study is assessing the prevalence of sleep disturbances in enuretic children, sons of work-shifters.

Materials and methods: 80 children (67 males) aged 5-13 years (mean 10.43; SD ± 1.99), were consecutively referred for PMNE. Sleep habits were investigated with Sleep Disturbances Scale for Children (SDSC) and the results were compared with a control group of 255 (190 males) typical developing children (TDC) sons of no shift-workers, matched for age (mean 10.57 SD ± 1.89; p = 0.569) and sex distribution (Chi-square= 2.416; p = 0.120).

Results: To evaluate statically differences among mean values of two samples, the Chi-square test was performed. Logistic regression was assessed to verify the role of paternal shift-working as risk factor for sleep disorders. p≤0.05. All sleep disturbances categories were more prevalent in PMNE children sons of shift-workers than control group (Chi-square= 43.926; p<0.001); particularly 82.5% of PMNE vs. 11.76% of TDC show pathological scores for SBD category (Chi-square = 145.592; p<0.001; OR = 35.35; IC95% = 17.71-70.57); 61.25% vs 9.41% for SWTD (Chi-square = 93; p < 0.001; OR = 15.213; IC95% = 8.21-28.15); 57.5% vs 9.41% for DA (Chi-square = 82.31; p < 0.001; OR = 13.02; IC95% = 7.06-23.98); 37.5% vs 6.67% for DIMS (Chi-square = 45.476; p < 0.001; OR = 8.4; IC95% = 4.3-16.39); 26.25% vs 5.88% for SHY (Chi-square = 24.257; p < 0.001; OR = 5.69; IC95% = 2.76-11.71) and 25%c vs 5.49% for DOES (Chi-square = 23.323; p < 0.001; OR = 5.73; IC95% = 2.73-12.01).

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Introduction

Primary monosymptomatic nocturnal enuresis (PMNE) is a very common disorder in developmental age with a prevalence of 10.6% of subjects over 5 years of age, particularly among males respect of females, and sometimes persisting until adolescence. Generally, PMNE is defined as the not voluntary urine loss during the night in children over almost 5 years of age\(^{(1-9)}\).
Materials and methods

80 children (67 males) aged 5-13 years (mean age 10.43; SD ± 1.99) affected by PMNE (≥3 episodes per week) and sons of shift-workers were recruited.

Exclusion criteria were the following: overweight (z-BMI> 85 pc) and obesity (z-BMI > 95 pc), cognitive disability (IQ <70), neurological disorders (ie headaches, epilepsy), chromosomal syndromes (eg. Down, Prader-Willi, Crouzon, Pierre-Robin, trisomy 18), psychiatric illness (ie. mood disorders, anxiety disorders, psychosis) and specific neuropsychological disorders.(13,38)

The control population consisting of 255 typical developing children (TDC) sons of non shift-workers (190 males) similar for age (mean 10.57, SD ± 1.89; p = 0.569) and gender (Chi-square= 2.416; p = 0.120).

Sleep habits assessment

To evaluate sleep habits and disturbances, all of the subjects’ mothers filled-out the Sleep Disturbances Scale for Children (SDSC), a standardized questionnaire for the assessment of sleep problems during development, consisting of 26 items grouped into six subscales: Disorders in Initiating and Maintaining Sleep (DIMS), Sleep Breathing Disorders (SBD), Disorders of Arousal (DA), Sleep-Wake Transition Disorders (SWTD), Disorders Of Excessive Somnolence (DOES), and Nocturnal Hyperhidrosis (SHY).

Results

Table 1 shows the differences in percentages (%) of pathological scores between the two population of children (Primary nocturnal enuresis; PMNE and typical developing children; TDC) for assessment with Sleep Disturbance Scale for Children test (SDSC) subscales: DIMS, Disorders in Initiating and Maintaining Sleep; SBD, Sleep Breathing Disorders; DA, Disorders of Arousal; SWTD, Sleep-Wake Transition Disorders; DOES, Disorders Of Excessive Somnolence; SHY, Nocturnal Hyperhidrosis. t-test was performed when appropriated.

*p values ≤ 0.05 were considered as statistical significant.

Table 1: shows the comparison for percentages (%) of pathological scores between the two population of children (Primary nocturnal enuresis; PMNE and typical developing children; TDC) for assessment with Sleep Disturbance Scale for Children test (SDSC) subscales: DIMS, Disorders in Initiating and Maintaining Sleep; SBD, Sleep Breathing Disorders; DA, Disorders of Arousal; SWTD, Sleep-Wake Transition Disorders; DOES, Disorders Of Excessive Somnolence; SHY, Nocturnal Hyperhidrosis.

<table>
<thead>
<tr>
<th></th>
<th>PMNE (n=80) %</th>
<th>TDC (n=255) %</th>
<th>Chi-square</th>
<th>OR</th>
<th>95% IC</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIMS</td>
<td>37,5</td>
<td>6,67</td>
<td>45,476</td>
<td>8,4</td>
<td>4,30 - 16,39</td>
<td>&lt;0,001</td>
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<tr>
<td>SBD</td>
<td>82,5</td>
<td>11,76</td>
<td>145,592</td>
<td>35,35</td>
<td>17,71 - 70,57</td>
<td>&lt;0,001</td>
</tr>
<tr>
<td>DA</td>
<td>37,5</td>
<td>9,41</td>
<td>82,310</td>
<td>13,02</td>
<td>7,06 - 23,98</td>
<td>&lt;0,001</td>
</tr>
<tr>
<td>SWTD</td>
<td>61,25</td>
<td>9,41</td>
<td>93</td>
<td>15,21</td>
<td>8,21 - 8,15</td>
<td>&lt;0,001</td>
</tr>
<tr>
<td>DOES</td>
<td>25</td>
<td>5,49</td>
<td>23,323</td>
<td>5,73</td>
<td>2,73 - 12,81</td>
<td>&lt;0,001</td>
</tr>
<tr>
<td>SHY</td>
<td>26,25</td>
<td>5,88</td>
<td>24,257</td>
<td>5,69</td>
<td>2,76 - 11,71</td>
<td>&lt;0,001</td>
</tr>
<tr>
<td>SDSC TOT</td>
<td>21,25</td>
<td>0,78</td>
<td>43,926</td>
<td>34,13</td>
<td>7,68 - 151,6</td>
<td>&lt;0,001</td>
</tr>
</tbody>
</table>

Discussion

PMNE is one of the most common and disabling developmental problem, impacting different functioning of day-life areas and quality of life.

About the PMNE role in sleep habits dysregulation, affected children may present a different representation of early stages of NREM sleep, associated with the presence of numerous cortical arousal characterized, however, by the inability of subjects to behavioral awakening real. In this light, also disturbing psychological factors as the systematic and regular father absence during night may contribute to worse the sleep quality of PMNE children.(39-42)

In fact, although all categories of sleep disorders are prevalent in PMNE subjects, also the DA scale is strongly different. DA scale explores the presence of parasomnias, such as sleepwalking and sleep terrors, nocturnal episodes that may be also related to psychological troubles such as internalizing problems. These disorders may be more prevalent in psychological disturbed situation such as parental death, institutionalization, lack of one parent during the night, even if further research are needed(43-80).

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