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PREVALENCE OF NOCTURNAL ENURESIS AMONG PRIMARY SCHOOL CHILDREN IN SPAIN

Hypothesis / aims of study

The study's aim is to determine the prevalence of nocturnal enuresis in children aged between 6 and 11 years old attending primary schools in Spain, and to examine its relation to bio-demographical data such as gender, age, type of education (private or public), weight, height, body mass index (BMI), and hereditary factors.

Study design, materials and methods

An epidemiological cross-sectional study was carried out with a questionnaire completed by the parents of children attending different types of schools. Parents previously gave their consent to participate in this survey. This study was approved by the Ethical Committee.

The study was conducted in Alicante, an area of Spain which is representative of the whole country in terms of the ratio of private/public schools. This proportion is 33% private vs. 67% public, and is comparable to the rest of the Valencia region where Alicante is located, and the whole of Spain.

Nocturnal enuresis was defined as "loss of urine occurring during sleep." Sample size was determined in order to obtain a 95% precision rate (confidence interval \pm 3%) in the primary outcome, the nocturnal enuresis prevalence.

A total of 1687 questionnaires were mailed to the schools, taking into account the proportion of the different types (private or public) (542 questionnaires were mailed to private schools and 1145 to public schools); 1345 questionnaires were collected, and 1279 were considered valid for statistical analysis (66 were excluded due to lack of information relative to age and sex).

Results

Data from 1279 children were included in the analysis: 647 were boys (50.6%) and 632 - girls (49.4%).

The nocturnal enuresis prevalence observed in this population was 7.8% (100/1279).

This prevalence was significantly higher in boys, 10.8% (70/647), than in girls 4.8% (30/632) ($p < 0.0001$), and decreased with increasing age, as shown in the table below.

| Grade (years old) | n | % nocturnal enuresis (n) |
|-------------------|-------------|--------------------------|
| First (6 - 7) | 227 | 15.4 (35) |
| Second (6 - 8) | 221 | 12.7 (28) |
| Third (7- 9) | 221 | 7.2 (16) |
| Fourth (8 -10) | 234 | 2.6 (6) |
| Fifth (9 -11) | 176 | 4.6 (8) |
| Sixth (10 -11) | 200 | 3.5 (7) |
| Total | 1279 | 7.8 (100) |

A similar prevalence of nocturnal enuresis was evident, regardless of the type of school (private/public), as shown in the table below.

| Type of schools | % nocturnal enuresis (n) | p-value |
|-----------------|--------------------------|------------|
| Private | 8.8% (36/411) | |
| Public | 7.4% (64/868) | $p = 0.39$ |

BMI, weight, and height appeared to be higher in children without nocturnal enuresis as compared to children with the condition, however the differences for height and weight were not statically significant, while a trend was found for BMI.

| Grade (years old) | BMI \pm SD | | p |
|-------------------|-------------------------|----------------------------|------|
| | With nocturnal enuresis | Without nocturnal enuresis | |
| First (6 - 7) | 16.5 \pm 2.9 | 17.0 \pm 3.0 | 0.53 |
| Second (6 - 8) | 16.8 \pm 2.1 | 17.3 \pm 2.9 | 0.46 |
| Third (7- 9) | 16.2 \pm 1.6 | 17.6 \pm 2.8 | 0.06 |
| Fourth (8 -10) | 15.3 \pm 1.3 | 18.3 \pm 3.2 | 0.06 |

| | | | |
|----------------|------------|------------|------|
| Fifth (9 -11) | 18.4 ± 2.4 | 18.7 ± 3.0 | 0.82 |
| Sixth (10 -11) | 18.7 ± 5.5 | 19.3 ± 3.0 | 0.70 |

No differences were found in any of the following characteristics: children living with their parents or with other relatives, number of siblings, and order among siblings.

73% of the children with nocturnal enuresis showed family history of the condition (among parents, siblings, and/or grandparents).

55% of the bedwetting population reported suffering from this condition for as long as they can remember.

31% of children who presented with nocturnal enuresis reported episodes of loss of urine every single night, 38% at least once a week, and 31% at least once a month.

87% of the population with nocturnal enuresis was under treatment for this condition (82% with absorbent devices, 9% with enuresis alarm, 13% with psychological support, 19% on pharmacological treatment and 8% on other treatments).

When asked about their general feeling, children said they felt fine in 96.9% of the cases, although there were more bedwetting children who reported feeling a little bit uncomfortable (76.7% vs. 23.1%; $p = 0.004$).

Interpretation of results

The prevalence of nocturnal enuresis (7.8%) among Spanish children attending public and private schools is similar to prevalence rate reported previously, being significantly more prevalent in boys than in girls.

The rate of bedwetting clearly decreases with advancing age (from 15.4% at 6-7 years old to 3.5% at 10-11 years old).

Only one quarter of children suffering from nocturnal enuresis had no family members suffering from this problem.

The episodes of enuresis are present on nightly bases in nearly one third of the subjects.

Only 13% of the children presenting with nocturnal enuresis were not on any kind of treatment.

Concluding message

Nocturnal enuresis is a frequent condition, being significantly more prevalent in boys than in girls, and its prevalence declines with the child's age.

Nocturnal enuresis is a disturbing problem, since bedwetting children felt more uncomfortable than those without the condition.

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