SLEEP MEDICINE IN ROMANIA – THE RESULTS OF A QUESTIONNAIRE APPLIED TO DOCTORS OF VARIOUS MEDICAL SPECIALTIES

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ABSTRACT

Pediatric sleep medicine is an area of intense research. The importance of screening for obstructive sleep apnea syndrome (OSAS) has been emphasized in the recently published international guidelines for the diagnosis and management of childhood OSA. In Romania, the first steps of diagnosis and treatment of sleep disorders in children have been recently made and we wanted to assess the current awareness and management option in a group of HCPs. A self-administered questionnaire was sent by email to pediatricians, family doctors, medical doctors of other specialties, including pneumologysts, psychiatrists and ENT specialists. The results, important for the qualitative information, show that pediatric sleep disorders, mainly OSAS, are diagnosed rather by specialists than by family doctors, and that in most cases the management strategy was re-evaluation of the child and/or referral to another specialist. Half of the respondents completed the final open qestion showing the need for improvement, both theoretical and practical knowledge, for a better communication between specialists and improvement of access to diagnostic tools, as well as increase of education of parents and older children and adolescents. Further research is needed to confirm these qualitative data, however the questionnaire allowed the identification of poor areas for various working groups, finally elaborating recommendations for various interventions which might influence the development of this field in our country as well.

Keywords: sleep, children, obstructive sleep apnea, pediatrician

INTRODUCTION

The acknowledgement of the importance of sleep for the health of children and adolescents is relatively new. The research carried out during the last decades led to the identification of those diseases specific to the various stages of development of the pediatric age as well as diseases observed initially in adults such as obstructive sleep apnea syndrome or restless legs syndrome. This study also explored the interrelation between sleep disorders and other medical or psychiatric diseases including depression and ADHD.

Despite this substantial progress in those countries where pediatric sleep medicine has now been known for a long time, there are still many questions regarding the fundamental aspects of diagnostic and treatment in pediatric sleep diseases (1). There is still a lot to learn on the development of sleep in childhood as well as on the relationship between various sleep disorders and their negative impact. Doctors of various specialties as well as families, educators and teachers are often poorly informed on the importance of sleep, the sleep routine adjusted to age or the necessary treatment (1).

Starting from these considerations the performed study presents a summary of the answers to a questionnaire of evaluation of current knowledge on the sleep matter in children in our country, especially Obstructive Sleep Apnea Syndrome (OSAS). The respondents to the questionnaire were family doctors as well as doctors of various pediatric specialties, the aim being to identify poor areas for various working groups in order to establish how we can influence the development of this field in our country as well.

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PRELIMINARY CONSIDERATION

Being the first research of this type, there was limited information available in the preliminary phase. Therefore we chose an exploratory availability sample, looking to provide general answers to the hypotheses of the research rather than an exhaustive description of the situation. We have distributed the questionnaire to doctors about whom there were indications that they had met or should have met the studied casuistry.

MATERIAL AND METHOD

We used a standardized self-administered questionnaire. The formatting of the questionnaire made it easy for it to be applied electronically and sent through email. The sample comprises 68 respondents and it is relatively heterogeneous. The respondents to the questionnaire were family doctors as well as specialists; among the latter, pediatricians are the most numerous (among whom there are also pediatricians with additional specializations). The number of years of experience and the localization also vary. Taking into account the size of the sample, for the purposes of this section we will look at the entire sample as well as a few specific groups, presented in the following table (Table 1). Thus, depending on their specialization, we will search to see whether family doctors, pediatricians or the other specialists have different opinions; as to localization, we will check whether differences appear between doctors in Bucharest and those coming from the rest of the country; depending on the number of years of practice, we have divided the sample into two groups, using the threshold of 10 years of experience.

TABLE 1. *The sample and the specific groups*

Specialization	Respondents	Percentage
Family medicine	13	19%
Pediatrics	36	53%
Other specialty	19	28%
Localization	**Respondents**	**Percentage**
Bucharest	38	56%
Elsewhere	30	44%
Experience	**Respondents**	**Percentage**
under 10 years	35	51%
over 10 years	33	49%

CASUISTRY

As expected, family doctors as well as pediatricians have many child and adolescent patients under 18, who represent the group of interest for the present research. Thus, 69% of the family doctors and 75% of the pediatricians included in the sample say that they have more than 100 such patients. The smaller percentages (Table 2) say that they have fewer patients, but there were no "none" responses. As to the other specialists, only half of them say that, among their current patients, they have children or adolescents aged under 18. In their case, we expect not to meet the analyzed casuistry, but it will be interesting to follow the differences of opinions as compared to the doctors who are confronted with such cases. The distribution according to experience and localization is homogeneous, there are no statistically significant differences.

TABLE 2. *The number of patients under 18 years old by specialization*

	Family medicine	Pediatrics	Other specialization
None			47%
1-10	8%	3%	5%
10-50	8%		11%
50-100	15%	22%	
more than 100	69%	75%	37%

As to the cases of Obstructive sleep apnea syndrome (OSAS) identified in the last six months, we can observe that only 35% of the respondents (which means 24 doctors) have met at least one in the last six months. 62% say they haven't met such cases. It is a positive thing that only 2 doctors responded that they hadn't considered OSAS to be a disease so far (Table 3). However, it should be noted that the two respondents who provided these answers have over ten years of experience and they are specialists. It is interesting to notice that among the doctors with less than ten years of experience, the percentage of those who have diagnosed at least one case of OSAS in the last six months is of 43% as opposed to only 27% of those with over 10 years of practice. This can be a sign that, similar to other diseases newly brought to doctors' attention, younger persons are more receptive to the identification of this disease as well. Another possible explanation may be related to their various participation in courses andworkshops whose purpose was to improve their awareness and knowledge in this field.

TABLE 3. *Number of cases of OSAS identified in the last 6 months*

	Respondents	Percentage
None	42	62%
At least one, maximum 80	24	35%
Have not considered OSAS to be a disease until now	2	3%

Another difference worth being noticed depends on the respondents' specialization – family doctors, pediatricians and other specialists. In the case of family doctors and pediatricians, only 31% of the respondents had at least one case in the last six months, while in the case of the other specialists the percentage increases to 47%. This could be an indication that some of the cases reach various specialists directly, without previous visit to family doctors or pediatricians, and don't return to them, the collaboration chain being practically inexistent.

Of the doctors who have met at least one case in the last six months, two thirds mentioned one to five cases and only one third more than five, up to twenty cases. Only one respondent indicated 80 cases, which may also be a filling error, especially since the respondent is a resident. The family doctors who diagnosed OSAS met in the established period an average of 1.5 cases, much less than the pediatricians (average of 6.64) or doctors of other specialties (average of 8.84, without taking into account the person whose answer was 80 cases). It is still a sign that this disease is diagnosed directly by the specialist rather than the family doctor and it can be a reconfirmation of the fact that family doctors are not ready to take over or diagnose these patients based on their symptoms.

ABOUT PATIENTS WITH OSAS

Questions about patients with OSAS were answered only by the doctors who have met such cases in the last six months. As shown before, there are 23 respondents. The small number of answers does not allow us to make subgroup analyses, but we can follow the opinions of the whole group. We have followed two indicators: the reaction to the identification of a new case, respectively the way in which the cases are monitored..

The respondents were asked what they did after diagnosing OSAS, and were provided three answer options: referral to specialist (with sub-options pediatric ENT, pulmonologist and another specialist); re-evaluation of the child; no reaction. It is important to note that none of the doctors who identified at least one case answered that they took no action. This means that the identification of this disease causes doctors to react.

Let's look first at the overall casuistry. It can be observed that the strategy most of the respondents preferred (11, therefore 48% of the cases) was to combine re-evaluation of the patient with referral to another specialist. Another 10 (representing 39%) said that they used exclusively the referral to another specialist and only one (4%) answered that he only recommended re-evaluation. Only 2 respondents answered that they used none of the two methods.

Looking at the number of cases, it is clearly confirmed that referral to another specialist is the method preferred by the majority of doctors. Thus, 18 of the respondents, representing 78% of the established subsample, preferred this method in most of the identified cases. Since this aspect is also valid for specialists, we can state that for OSAS diagnosis the doctors (those prepared to identify such a case) prefer to have a multidisciplinary perspective, therefore asking also the opinion of other colleagues, of different specializations.

For the second indicator, case monitoring, we used a similar approach. The respondents were asked to mention in how many cases they used at least one of the following methods: ask the specialist for information; ask the family for information; receive information from the specialist, at their initiative.

Applying a similar method, let's take a look first at the overall situation. 39% of the doctors who met at least one case in the last six months use only one method for case monitoring – namely the contact with patient's family. In another 35% of the cases, in addition to discussions with the family, doctors communicate with other specialists, initiated by one party or the other. However, 26% (meaning 6 doctors) say that they use neither of these methods. Nevertheless, only half of them state that they are poorly informed with regard to one or more cases.

TABEL 4. *Number of methods for OSAS monitoring*

Number of methods for OSAS monitoring (23 respondents)		
	Number	**Method**
One (family)	9	39%
Two	3	13%
Three	5	22%
None	6	26%

Surely, the preferred method is contact with patient's family, which is used by all doctors who chose at least one of these methods, without having also a detailed description of the way in which they perform it (which could be assessed in a future questionnaire).

GENERAL OPINIONS ABOUT OSAS

The general questions about OSAS were addresses to the entire sample. Therefore, we will be referring again to all 68 respondents.

Answers to the first question, regarding their **knowledge on sleep-disordered breathing** in pediatric population, already indicates that this topic is a little known: 53% of the respondents admit that their knowledge is poor and 8% can't evaluate it. Only 38% have good knowledge and only 1% appreciates having very good knowledge (Fig. 1).

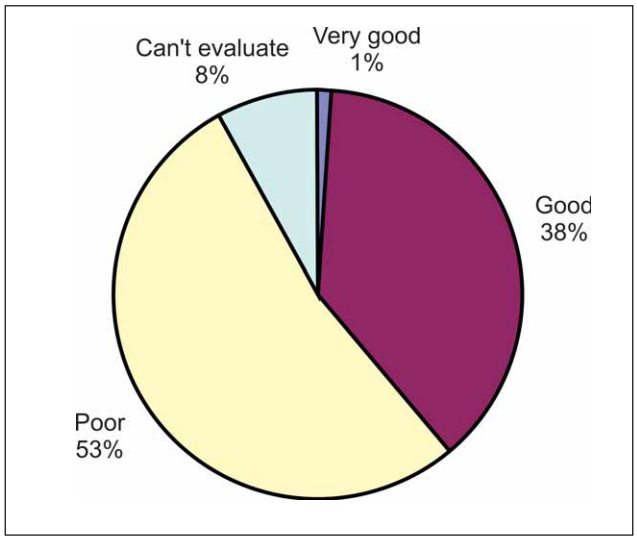

FIGURE 1. *Knowledge about pediatric sleep-disordered breathing*

The situation is somewhat better in the case of pediatricians: only 46% say that they have poor knowledge or can't evaluate it, while the majority (54%) states that they have good or very good knowledge of the matter. Family doctors (31% good or very good knowledge) and amazingly, the other specialists (only 17% good or very good knowledge) are poorly informed.

As expected, there is a strong correlation between meeting at least one case and evaluating own knowledge. All doctors who had at least one case of OSAS in the last six months evaluate that their knowledge about this type of disease is good.

When asked who has **the most important role in the identification of children/adolescents with OSAS**, the majority of the respondents (44%) mentioned the pediatrician. The second factor by percent of responses (38%) is family. The family doctor is mentioned by 12% of the respondents, and the pulmonologist by 6%. None of the respondents chose ENT from the available list (Fig. 2).

Experience represents a differentiating factor in this case. Doctors with more than ten years of experience tend to think that more responsibility belongs to the family, therefore 51% of them chose this answer. Instead, those with less than ten years of experience still consider more important the role of the pediatrician, placed first by half of them. It is

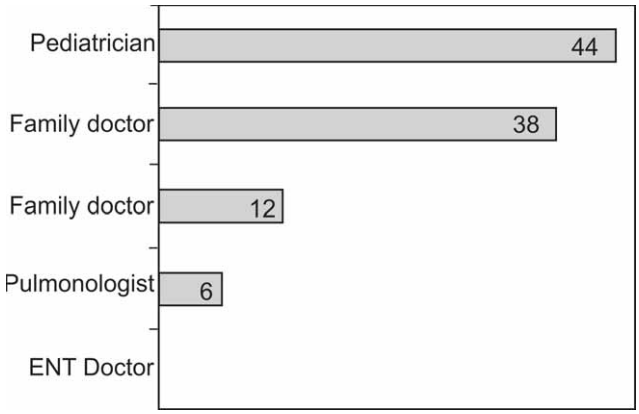

FIGURE 2. *The role in identification of children/ adolescents with OSAS*

also interesting that 61% of the family doctors consider that the most important role belongs to them.

Doctors who had at least one case have significantly different opinions as compared to their colleagues'. They indicate either the pediatrician (50%), or the pulmonologist (50%). None of them indicates family or family doctor. Furthermore, doctors who had at least one case are the only ones who indicate the pulmonologist as having the most important role.

- Almost all respondents, irrespective of their specialization, consider that they have a role in monitoring OSAS cases among their patients. Their opinions with respect to the most efficient method – information from the specialist or information from the family – are divided approximately equally among the two options. There are no significant differences between the various analyzed groups.
- Referring to diagnosis, the respondents were asked to fill in which they considered to be the best procedure to be followed for future cases. The answers to this open question (without predefined answers) quite clearly fall into three large categories: 15% of the respondents would perform additional investigations, 62% would ask (also) for the opinion of another specialist and 24% don't have an answer (this may be caused by the open question or because they didn't know, in the absence of other information we can't establish which is the case).
- Again, doctors who had at least one case are better informed. None of them refuses to answer or answers I don't know. But at the same time, they are also less decided: their answers are equally divided between additional investigations (50%) and referral to other specialists (50%). The specialists men-

tioned in their answers are pediatricians, pulmonologists and ENT doctors.

In the last question of the questionnaire, an open question as well, the respondents were asked to indicate what should be changed in order to improve the current situation. Approximately half of them gave precise answers, and the main directions they indicated are the following:

- better information of all the people involved: family, family doctors, specialists. This is the most common observation. Some of the respondents also mention specific elements, such as educational materials and information campaigns.
- improvement of professional communication between different specialists. The meaning of this recommendation is that there is too little awareness on this topic and there are too few scientific works on the matter. This may relate to the need for more information.
- improvement of the abilities of the doctors involved: theoretical knowledge, practical abilities, abilities to communicate with the family
- increased access to diagnostic methods. Investigations in these cases are expensive and therefore avoided by many patients. The existence of more centers provided with the necessary equipment would be useful. Another respondent mentions the screening of OSAS at the national level.

DISCUSSIONS

Many studies have shown that sleep disorders remain under-diagnosed in pediatricpopulation(2) and by lack of diagnosis and treatment they have a significant negative impact with respiratory, cardiovascular, metabolic and neurobehavioral implications (3,4).

Therefore researchers have tried to find the missing link in establishing an early diagnostic. Only 3.7% of the children examined during periodic checkups carried out in a primary care network were diagnosed with a sleep disorder (2). This extremely low rate of diagnosis was caused by a combination of factors: primary care doctors who do not address questions related to sleep and parents who do not communicate these issues. It has been observed that even when doctors ask sleep-related questions they will hesitate and be reserved about discussing more on the subject because of their lack of confidence in their ability to manage these issues related to sleep (5,6).

Another important link is represented by educators and teachers. It is recommended that, together with school administrators, to collaborate with the medical personnel involved in the screening, diagnostic and treatment of sleep-related problems, with parents and at the same time with children, especially with adolescents in order to understand the changes that appear in the sleep behavior at this age and the implications of inadequate sleep (7). Here are some landmarks: change of school start time, development of a system of evaluation of students who constantly experience sleepiness and fall asleep during classes, adjustment of homework hours, especially if they require extended study during the night.

Although it is limited by the relatively reduced number of applied questionnaires, our study consisting in the application of a standardized self-administered questionnaire to which family doctors as well as specialists of various pediatric specialties answered, illustrated the same behavior among doctors in Romania. Family doctors diagnose sleep apnea syndrome more rarely than specialists, which can be explained also in our case by the fact that family doctors are not prepared to take over or diagnose these patients based on their symptoms and that some of the cases reach various specialists directly, without previous visit to family doctors.

Nevertheless, half of the respondents completed the final open qestion showing the need for improvement, both theoretical and practical knowledge, for a better communication between specialists and improvement of access to diagnostic tools, as well as increase of education for affected families.

CONCLUSIONS

In the general context of pediatric sleep medicine development carried out during the last years and the experience of many centers worldwide in this matter, the results of our research and the recommendations made by the respondents suggest more interventions which may yield results in our country as well:

Clinically

- since sleep occupies an important place in their life (children sleep half of the time) it is necessary that the discussions during periodic checkups with primary care doctors include this subject; thus, screening through direct questions highly increases the probability that sleep disorders are recognized and treated
- increasing visibility within other pediatric specialties, informing and educating doctors who may observe the existence of sleep problems when patients come for different needs of med-

ical care (pediatrics, pediatric neurology, pediatric psychiatry, endocrinology, pediatric ENT, pediatric pulmonology, psychology, speech therapy, pediatric kinetotherapy etc.)
- early screening and intervention meant to improve disorders associated with sleep apnea syndrome in children with special needs, with a view to improving the development of these children, increasing their school performance and their subsequent chance of integration into society
- increasing availability of pediatric sleep medicine centers
- encouraging multidisciplinary collaboration carried out according to protocols and national or international guidelines

Education
- the necessity to increase the degree of awareness of the importance of sleep matter in children and adolescents
- education of doctors and students regarding screening, diagnosis and treatment of these diseases
- education of nurses
- education of educators, schoolmasters and teachers
- education for parents and children – information campaigns in magazines dedicated to this issue, in the media, on the internet

Public Policies
- school start time – especially for adolescents
- hours of broadcasting television programs dedicated to children and adolescents

Research

Although the field of pediatric sleep medicine is still new in our country, together with our colleagues who have already walked this road in adult sleep medicine, we believe that is mandatory to include these steps within a national strategy for ensuring child physical and neurobehavioral development.

It is necessary to evaluate prevalence data for pediatric sleep-disordered breathing, monitor the impact of sleep apnea syndrome in children and adolescents, the role of obesity and data on the best treatment methods. By means of a multidisciplinary approach all of these will provide information and scientific support in ensuring the best care for children and adolescents with sleep apnea syndrome.

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