

# Barriers to paediatric pain management as viewed by doctors in the region of Thiès, Senegal: first results

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## Keywords

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## Abstract

**Background:** Effective paediatric pain treatment has been proven to be highly beneficial, both in the short and long term, but remains largely unavailable in developing countries. Given that little is known about what doctors in Senegal see as barriers to paediatric pain management, this information can help to improve current practice in Senegal. In light of the diverse background of patients and parents in Belgium, it can also provide valuable insights to Belgian paediatricians.

**Objective:** The aim of this study was to identify and assess barriers to effective pain management in children, as viewed by doctors working in Senegal.

**Methods:** We used an observational, cross-sectional study design with a single questionnaire. Questionnaires were handed out to 65 doctors. The study was conducted in 2018 in the region of Thiès, Senegal.

**Results:** The response rate was 86%. Respondents found pain evaluation to be more difficult in younger children. Only 15% of doctors always have access to opioids and only 22% have access to a protocol for paediatric pain management. A majority (60%) has not received training in paediatric pain management in the past 5 years. Strikingly, 30% think that opioids should be reserved for children with cancer or for palliative care.

**Conclusion:** The main barriers to effective pain management are access barriers to medication, with low access to opioids. Furthermore, the physicians consider access barriers to protocols and training to be another important factor. Lack of the latter may explain why we see that some misconceptions regarding pain still exist.

## Introduction

Despite the known negative consequences associated with inadequate pain management, effective pain treatment remains largely unavailable to children in the developing world.

There is considerable evidence that effective pain management has the potential to reduce both morbidity and mortality, lower anxiety and stress of both the child and the families, facilitate recovery and reduce the cost of healthcare (1,2). Alongside these practical advantages, access to pain management is considered by the International Association for the Study of Pain (IASP) to be a fundamental human right (Declaration of Montreal) (3). A joint statement was issued by the American Academy of Pediatrics (AAP) and the American Pain Society (APS) in 2001 to underscore the importance of paediatricians assuming a leadership and advocacy role to ensure the humane and competent treatment of pain and suffering in all infants, children, and adolescents (4). However, in spite of the widespread evidence and knowledge of the importance of pain treatment, paediatric pain is largely underrecognised and undertreated all over the world (5). The AAP states that this is due to, amongst other things, the myth that children do not feel pain the way adults do, the misunderstanding of how to quantify a subjective experience, the lack of knowledge of pain treatment and fears of adverse effects of analgesics (4).

On top of these difficulties, doctors in the developing world face a multitude of challenges, many of which they cannot control directly. For instance, Africa bears 24% of the global burden of disease, and yet possesses only 3% of the world's healthcare force (6). Case in point, Senegal has roughly one doctor per 14,500 inhabitants whereas Belgium has one doctor per 326 inhabitants (7). The result is a great global inequality of pain treatment due to a variety of issues. With respect to paediatric pain management in sub-Saharan Africa, the challenges have been described by Albertyn et al (8). Firstly, there are **access barriers** which result in a lack of analgesic medicine, information and education. Secondly, there are **attitudinal barriers**, where cultural

differences impact the management of paediatric pain. And, thirdly, there are **legal barriers** imposed by regulations that have been put in place due to fear of drug dependence and abuse.

Little is known about the specific barriers for paediatric pain management in Senegal. While we know that access to health care and a shortage of health-care workers are major barriers to providing pain treatment to children, this study focused on children who have already been hospitalised because within that context there are factors that can be influenced in the short term to improve paediatric pain treatment. As physicians are responsible for providing pain management, their view on the matter is highly important.

The aim of this study was to identify and assess barriers to effective pain management in children, as viewed by doctors working in hospitals in the region of Thiès, Senegal. We developed a questionnaire which evaluated the doctors' attitude towards pain and treatment and their access to drugs, protocols and pain scales.

## Methods

This study was designed as a cross-sectional, observational study with a single questionnaire.

The study was conducted in the region of Thiès in western Senegal between May 2018 and July 2018 in four different hospitals in this region: EPS1 (Établissement Public de Santé) Mbour, CHU (Centre Hospitalier Universitaire) Diannadiou, CHR (Centre Hospitalier Regional) Thiès and HSJD (Hôpital Saint Jean de Dieu) Thiès. The questionnaire was specifically designed for the study, based on previously published questionnaires.

The semi-structured questionnaire consisted of 29 items (addendum). The questions were divided in six sections: 1) evaluation of pain, 2) attitude, 3) treatment options, 4) accessibility of medication, 5) knowledge, 6) quality improvement.

The study included medical doctors who worked with children in one of the four hospitals. Medical students in their last year of medical training were also included if they worked at a ward where children were treated at the moment of inclusion. This was done because the organisation of healthcare in Senegal is such that these students treat patients independently. Participants were given a questionnaire with information about the purpose of the study and their consent to participate was obtained. Respondents were informed that their contributions would remain confidential and anonymous.

The questionnaires were administered by the researchers and entered and analysed using Statistical Package for Social Sciences (SPSS, version 26.0).

Descriptive analyses were used to describe study population characteristics. Data were described as frequency and/or percentage or as median and range. The association between variables was analysed using the chi-square test and Spearman's correlation coefficients. A P-value below 0.05 was considered statistically significant.

## Results

### Characteristics of participants (table 1)

Sixty-five questionnaires were handed out, of which 56 were returned and included in the analysis, corresponding to a response rate of 86%. The median age of all respondents was 32 years (range between 25 and 54 years old). Over half of the participants had between two and ten years of experience working with children, with a median experience of 5 years (range 0.5 to 20 years).

**Table 1** Characteristics of participants

	Frequency (N= 56)	Percent (%)
<b>Sex</b>		
Male	34	63%
Female	20	37%
<b>Age</b>		
25-35	31	56.4%
35-45	17	30.9%
45-55	7	12.7%
<b>Position</b>		
Resident pediatrician	12	21.8%
Pediatrician	14	25.5%
Emergency physician	4	7.3%
Surgeon	5	9.1%
Pediatric Surgeon	2	3.6%
Anesthetist	2	3.6%
Other	16	29.1%
Of which students	13	23.6%
<b>Hospital</b>		
CHU Diamniadio	26	46.4%
CHR HSJD	8	14.3%
CHR Thiès	8	14.3%
EPS1 Mbour	14	25.0%
<b>Years of experience in pediatrics</b>		
0-5	24	48%
5-10	15	30%
>10	11	22%
<b>Formation in pediatric pain management in the last 5 years</b>		
Yes	22	39.3%
No	34	60.7%

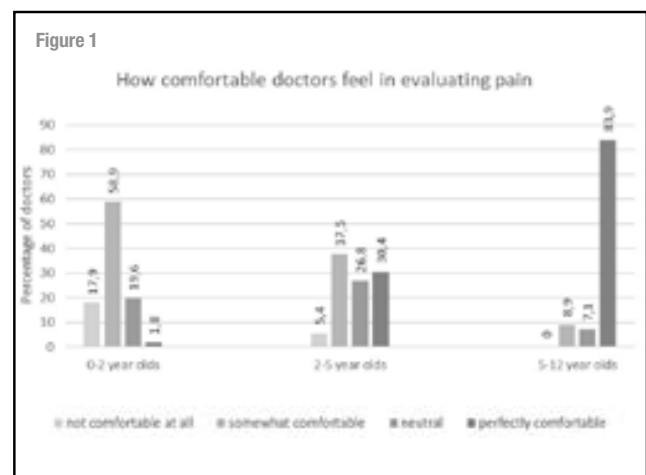
### Pain evaluation

The first section of the questionnaire addressed the evaluation of pain (table 2). Almost every professional used crying or facial expression (54/56) and discomfort or agitation (51/56) to evaluate pain. Eighty-five percent (48/56) listened to verbal complaints from patients and 64% (36/56) asked parents or caregivers if their child was experiencing pain. Forty-one percent (23/56) of the respondents used pain scales.

The majority of doctors did not feel comfortable or felt only somewhat comfortable evaluating pain in younger children. The older the patient, the more comfortable the doctor felt with evaluating pain (Figure 1).

**Table 2** How is pain evaluated by doctors

	Frequency (N = 56)	Percent (%)
Crying or facial expressions	54	96
Discomfort or agitation	51	91
Verbal complaints of patients	48	85
By asking caregivers	36	64
Pain scales	23	41



### Barriers to pain treatment

The main barriers were access barriers to medication, protocols and training. When asked, as an open-ended question, what they saw as the barriers to good pain treatment, most of the respondents cited the inaccessibility of medication (20/56) and the absence of protocols and training (25/56) as primary barriers. Some wrote that the financial situation of families makes it impossible for parents to buy the prescribed analgesics (7/56). Five of the 56 respondents also stated that their fear of the secondary effects of opioids was a barrier to them in providing good pain treatment.

#### Access barriers

While paracetamol and ibuprofen are widely available, there is poor access to opioids (table 3). Paracetamol was used by 100% of doctors and ibuprofen by 93%. Fifteen percent of the respondents always have access to opioids, while 46% of doctors either do not have access to opioids or only occasionally have access to them.

When the respondents were asked about the use of non-pharmacological treatment, 54% of them reported never using non-pharmacological treatments such as distraction, relaxation or massage for the treatment of pain.

Pain scales and protocols are only available to a minority of doctors. Although 41% of respondents reported using pain scales in the evaluation of pain, only 21% have a pain scale available at their department. Furthermore, only 22% of participants claimed to have a protocol for paediatric pain management available in the hospital where they work.

**Table 3** What medication and tools are used to treat pain

	Frequency (N = 56)	Percent (%)
<b>Medication</b>		
Paracetamol	56	100
Ibuprofen	52	93
Tramadol	42	75
Morphine	28	50
<b>Tools</b>		
Pain scales	11 (N = 53)	21
Protocols	12 (N = 54)	22
<b>Availability of opioids</b>	(N = 54)	
Never	1	2
Occasionally	24	44
Most of the time	21	39
Always	8	15

### Attitudinal barriers

In response to questions about attitude, a notable minority of doctors provided answers that are not in line with current knowledge of pain and pain treatment. For example, the WHO states that for children with medical illnesses 'there is no other class of medicines than strong opioids that is effective in the treatment of moderate and severe pain. Therefore, strong opioids are an essential element in pain management' (9). However, 30% of our cohort think that opioids should be reserved for children with cancer or for palliative care. In addition, when asked about which children our cohort would treat for pain, 18% of participants answered that they only treat children with unbearable pain and not every child with pain. When prescribing opioids, 64% fear the secondary effect of opioids despite the risk of severe complications being very low. In a large audit in England, for example, the risk of permanent harm after morphine infusion was 1/10,000 (10).

Seventy-two percent of the professionals think that the presence of parents during painful procedures has a negative effect on the procedure. Moreover, only 26% of doctors allow parents to be present during painful procedures.

Of the respondents, 82% think that religious or spiritual beliefs do not play a role in attitude of patients and parents towards pain.

### Evaluation

When asked to rate the paediatric pain management in their hospitals, respondents gave an average score of 6 on a scale of 1 to 10. The older the participants, the lower the rank: residents in paediatrics are significantly more positive about the pain management practiced in their hospital: they give an average mark of 6.6, whereas paediatricians give an average mark of 4.9 (P 0.01).

## Discussion

The aim of this questionnaire was to determine the barriers to providing adequate pain management for children in the region of Thiès in Senegal.

Pain assessment in children is considered difficult due to its subjective nature and the challenge of communicating with younger children. As expected, doctors felt less comfortable with evaluating pain in younger children, with more than half feeling uncomfortable with evaluating pain in very young children (0-2 years). At the same time, they were significantly more confident with the assessment of pain in older children.

Almost all doctors use clinical signs as crying, facial expression and discomfort or agitation to evaluate pain. It was striking that for pain evaluation only 64% of the respondents asked parents or caretakers for their impression

of the pain suffered by their children. This while most literature tells us that doctors underestimate pain in children, while parents' judgement is closer to the pain that patients experience (11,12). At the same time, this figure was clearly higher than what was found in a study conducted among paediatric oncologists in sub-Saharan Africa, who only asked parents about their child's pain in 38% of the cases (13). In future research, it would be interesting to ask patients and parents about the pain experience and their satisfaction with treatment.

Among our respondents, paracetamol and ibuprofen are the most widely used and available analgesics. This availability is slightly better compared with a study among paediatric oncologists in sub-Saharan Africa, where paracetamol is almost always or always available in 7 out of the 8 hospitals. In this same study, non-steroidal anti-inflammatory drugs (NSAID's) were only 'most often' available in 5 out of the 8 hospitals (13).

Opioids are less used, primarily on account of unavailability due to regulation and costs. Only 15% of the respondents always have access to opioids, while 46% of doctors either do not have access to opioids or only occasionally have access to them. This is a well-known problem in most African countries, where the availability of opioids is problematic due to, among other things, the difficult balance between adequate availability for medical purposes and the regulatory systems that have been set up to prevent the misuse of opioids.

Opioid use for medical purposes in Senegal is extremely low. Opioid use can be expressed in doses for statistical purposes (S-DDD), which is a technical unit of measurement for the purpose of statistical analysis and is expressed as quantity per million inhabitants per day. Levels under 200 S-DDD are considered to be inadequate, while levels under 100 are considered to be very inadequate (14,15). In Senegal opioid use was 3 S-DDD between 2001 and 2003 and 4 S-DDD between 2011 and 2013. This stands in stark contrast with Belgium, where >10,000 S-DDD was used between 2011 and 2013 (16).

This was also illustrated in a study carried out by Human Rights Watch (HRW) on palliative care in Senegal, which shows that while 70,000 people suffer life-limiting illnesses that require palliative care, the annual amount of morphine used in the country is only sufficient for treating about 194 patients a year (17).

We found only two earlier publications regarding opioid use in the paediatric population in Senegal. In one, 7.8% of doctors regularly use opioids, while 70.1% prescribe opioids only in exceptional cases (18). Another study conducted in sub-Saharan African countries (including Senegal) among paediatric oncologists, 62.5% of the doctors stated that unavailability is the greatest barrier to treatment with morphine (13).

In our cohort, when asked about the barriers to good pain treatment, most of the doctors stated that the absence of protocols is one of the primary barriers. Also, when asked about how the quality of pain treatment could be improved, most respondents suggested the implementation of protocols. Twenty-two percent of our participants claimed to have a protocol for paediatric pain management available in their hospital at the moment. This is in line with former findings in sub-Saharan paediatric-oncology centres, where a protocol was available in 25% of the cases (13). Literature confirms that protocols can improve the quality of pain treatment. For example, in a study in which a protocol was implemented for procedural pain management for paediatric patients, the use of topical analgesia went from 2% pre-implementation to 92% post-implementation (19).

In various studies, the fear of side effects has been found to pose a significant barrier to the prescription of opioids (20,21). This was also seen in our study population, where 64% fear the secondary effect of opioids. In response to the open-ended question of which side effects they fear the most, 18/56 answered dependency and 26/56 answered respiratory failure. Specific training and the availability of protocols could hypothetically reduce this fear, resulting in a better pain policy.

As previously mentioned, pain cannot be seen separately from its situational or cultural context. Pain is often part of traditions and rites in Africa where the ability to tolerate pain is seen as an essential and positive characteristic (22). Previous research has shown that cultural aspects play a role in pain

management, and we saw indirect evidence of this in the answers provided by our cohort who reported that they only treat pain when it becomes unbearable (18%) or who find that opioids should only be prescribed when children are undergoing cancer treatment or palliative care (30%) (13,23).

As many Belgian paediatricians work with a broad spectrum of patients and parents of different nationalities, insights from this study could be used to improve daily practice when it comes to understanding parents who are less familiar with non-pharmacological approaches, hesitant towards opioids or less spontaneous in reporting their children's pain to care providers. As one-third of doctors in this study think that opioids should be reserved for a palliative setting, this may implicate for the Belgian context that, for example, parents of (West) African descent may require a more detailed explanation when their children are prescribed opioids during hospitalisation. The insights can also inspire us to reconsider the focus we place on our practice of pain assessment and pain management.

Our study aimed to investigate the barriers to providing adequate pain management in Senegal. To our knowledge, it is the first study conducted amongst doctors in Senegal to elucidate the barriers to pain treatment in the general paediatric population. Despite the small number of physicians surveyed (65), the response rate was high (56). This study can serve as a point of departure for an audit on pain treatment, as it shows the current status of physicians' attitude toward pain management.

However, some limitations should be acknowledged. In addition to the small sample size, this was also the first time that the questionnaire was used, given that it was developed on behalf of this study. Furthermore, the data was gathered by means of self-reporting rather than observation, with the possibility of the former leading to socially desirable answers.

Future research could expand the scope to include both the patients' and parents' view of pain practice, as well as the nurses' attitude towards and knowledge of pain. Conducting a pain management assessment before and after the introduction of a protocol and proper training could also be valuable.

Additionally, misconceptions about pain and pain treatment could be averted by incorporating training about paediatric pain management into medical curricula and making an effort to implement national pain management protocols. On a larger scale, efforts should continue to encourage Senegalese policymakers to support and augment the health-care workforce and increase the availability of health care and essential medications.

## Conclusion

This study was designed to identify and assess barriers to effective pain management in children, as viewed by doctors working in hospitals in the region of Thiès, Senegal. The main barriers to effective pain management are **access barriers to medication**, with low access to opioids due to legislation. Furthermore, physicians consider **access barriers to protocols and training** to be another important factor. Lack of the latter may explain why we see that some misconceptions around pain and pain treatment still exist. Lastly, indirect evidence suggests that **attitudinal barriers** may exist, with a strikingly high number of physicians afraid to prescribe opioids due to their potential side effects, despite WHO recommendations for their use in pain treatment.

The authors have no conflict of interest to declare

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