Published in final edited form as:

J Asthma. 2016 September ; 53(7): 744–750. doi:10.3109/02770903.2015.1135946.

Asthma Management in New York City Schools: a Classroom Teacher Perspective

Agnieszka Cain, MBA and Marina Reznik, MD, MS

Department of Pediatrics, Children's Hospital at Montefiore, Albert Einstein College of Medicine, Bronx, New York

Abstract

Objective—Classroom teachers play an important role in facilitating asthma management in school but little is known about their perspectives around asthma management. We examined the perspectives of classroom teachers around barriers to school asthma management.

Methods—We conducted key informant interviews with 21 inner-city classroom teachers from 3rd to 5th grades in 10 Bronx, New York elementary schools. Sampling continued until thematic saturation was reached. Interviews were recorded, transcribed, and independently coded for common themes. We used thematic and content review to analyze interview data.

Results—Seven themes representing teachers' perspectives on in-school asthma management emerged: (1) the problematic process of identifying students with asthma; (2) poor familiarity with the city health department's asthma initiative and poor general knowledge of school policies on asthma management (3) lack of competency in managing an acute asthma attack in the classroom and poor recognition of symptoms of an asthma attack; (4) lack of confidence in dealing with a hypothetical asthma attack in the classroom; (5) lack of quick access to asthma medication in school; (6) limited communication between school staff; and (7) enthusiasm about learning more about asthma management.

Conclusions—Our results revealed several barriers contributing to suboptimal in-school asthma management: ineffective ways of identifying students with asthma, lack of teacher knowledge of guidelines on asthma management, lack of comfort in managing students' asthma, inadequate access to asthma medication in school, and limited communication between school staff. These issues should be considered in the design of interventions to improve in-school asthma management.

Corresponding Author: Marina Reznik, MD, MS; Associate Professor of Pediatrics, Albert Einstein College of Medicine, Children's Hospital at Montefiore, 3415 Bainbridge Ave, Rosenthal 4th Floor, Bronx, NY 10467, Phone: 718-741-2494; Fax: 718-654-6692; mreznik@montefiore.org.
Agnieszka Cain is a medical student at the Albert Einstein College of Medicine.

Declaration of Interest

The authors report no conflicts of interest.

This study was presented in part at the 141st American Public Health Association Annual Meeting, Boston, MA, November 2–6, 2013.

Keywords

teachers; inner-city; elementary school students; in-school asthma management; qualitative research

INTRODUCTION

Asthma is the most common chronic respiratory illness disproportionately affecting urban minority children of low socio-economic status.[1] According to the Centers for Disease Control and Prevention, 22.6 million individuals (7.3% of the US population) have asthma; 6.1 million of those are under the age of 18.[2] The highest asthma prevalence (9.9%) falls within the 5–14 year old age-group.[2] Of children with a current diagnosis of asthma, 57.9% reported having one or more attacks last year [2] and asthma remains one of the leading causes of school absenteeism.[3] Nearly 50% of children miss at least one day of school each year due to asthma related concerns.[4] In the Bronx, NY, an average of 6 children in a class of 30 are likely to have asthma,[5] which is twice the national average.[1]

The National Heart, Lung, and Blood Institute (NHLBI) has developed national guidelines on classroom asthma management.[6] The NHLBI guidelines delineate how school staff can effectively plan, implement, and maintain an asthma management program on their premises. The guidelines recommend that classroom teachers should: (1) be able to identify and track students with asthma; (2) provide care and support services for students who have asthma; (3) ensure quick and easy access to prescribed asthma medication; (4) know their role in maintenance of a school-wide plan for asthma emergencies; (5) minimize exposure to asthma triggers in the classroom; (6) allow students with asthma to engage in full participation in school activities; and (7) educate students, staff, and guardians about asthma.

During the 2004–2005 school year the New York City Department of Health and Mental Hygiene (NYC DOHMH) developed the Managing Asthma in Schools (MAS) initiative in order to improve health of children with persistent asthma in city schools.[7] MAS has components in common with the NHLBI guidelines and includes the following: (1) staff development around asthma education; (2) identification of children with physician diagnosed asthma and matching treatment to asthma severity; (3) Open Airways for Schools (OAS), an evidence-based asthma educational program for students with asthma in grades 3–5; and (4) an outline of a treatment for acute asthma attacks.[8]

Elementary school children spend many hours under the supervision of their classroom teachers, and it is widely held that teachers are responsible for the general safety and well-being of their students. Studies show that US teachers are not familiar with school policies or national guidelines on asthma management in schools.[9–11] Several studies demonstrate that many schools lack a clear process of identifying children in the classroom who have asthma.[10, 12] In one study, the use of the school methodology resulted in the identification of only 26% of the students with physician-diagnosed asthma.[12] In another, only 10% of questioned parents learned of a child's asthma through existing school protocols.[10] Additionally, the Medication Administration Form (MAF), completed by a child's physician, is required in NYC schools to allow school nurses to administer asthma

medication during an exacerbation.[8] However, the MAF is not supplied by a majority of caregivers and many of them are not familiar with the form.[12] Under these circumstances, the ability of school nurses to assist a child with an asthma attack is limited. Teachers can be important facilitators of asthma management in the classroom setting, but their perspectives around in-school asthma management have not been well characterized.

This analysis is part of a larger project to design a school-based intervention to address barriers to asthma management in schools. The objective of this qualitative study was to examine elementary school teachers' perspectives on barriers to in-school asthma management. Insights into these barriers using qualitative research methods may guide intervention development around in-school asthma management. The primary focus of qualitative research is to yield rich descriptive data and not test specific hypotheses.[13] Qualitative research uses an inductive approach to describe and explore subject matter rather than a deductive approach to test a priori hypotheses.[14]

METHODS

We conducted a qualitative study using individual interviews with classroom teachers in NYC elementary schools. The study was approved by the NYC Department of Education (NYC DOE) and university's Institutional Review Board (IRB) Committees.

Participants

Ten public elementary schools in the Bronx, New York were enrolled. The interviews were conducted and recorded with 21 classroom teachers from these schools. Study inclusion criteria consisted of the following: (1) teachers employed at the given school for at least 12 months, (2) teachers who taught grades 3, 4 or 5 at the time of the interview, and (3) having current or past students with asthma in the classroom. Two to three teachers were interviewed from each school. Three of the interviewed teachers were Special Education Teachers and one teacher taught two different grades at the time of the interview. All teachers spoke English.

Procedure

One author met with each school principal, who then identified 2–3 teachers who they believed would be good informants and were likely to have taught students with asthma. Eligibility criteria were verified with each teacher prior to the interview. Interviews were conducted in person by one author between January 2011 and May 2011. Interviews took place on school premises, at a time and date convenient to the teachers. The teachers received no compensation for their interviews and their participation was voluntary. An interview guide was developed, and covered concepts such as general asthma awareness, experience with asthma in school, actions taken during a hypothetical asthma attack, and knowledge of school policies and procedures relating to asthma. The interview guide was field-tested with one teacher for ease of understanding of the questions. The field-tested interview was recorded and transcribed and questions were revised based on the interview feedback. Qualitative studies have small sample sizes [15] and multiple sources suggest appropriate sample sizes for qualitative studies may fall in the range of 5–25 subjects. [16,

17] The appropriate sample size is determined by the point at which the data collection process no longer offers new or relevant data, known as thematic saturation. [18] Reaching saturation depends on the quality of the data, the scope of the study, the nature of the topic, the qualitative method, the study design, among other factors.[19] Teacher interviews were conducted until thematic saturation was reached. Based on our data, methods, and study design, our sample of 21 participants was appropriately determined based on reaching saturation. After the interview, teachers were asked to fill out a survey reporting on their age, gender, years of teaching, job title, ethnicity/race, their own asthma status, and if anyone in their family had asthma.

Data Analysis

All interviews were audio-recorded and professionally transcribed. Two coders independently read the transcripts and created codes for key points within the text. Through an integrative process, the discrepancies between transcripts were discussed and reconciled by the coders and a master codebook was developed. All interview transcripts were then independently coded using the master codebook. We used thematic and content analysis to analyze interview data[18] and identified themes related to specific phrases. Content analysis was used to identify the number of respondents who shared a particular idea or concept, and salient themes were assessed based on the frequency of occurrence. Emerging themes were discussed and agreed upon by both authors. We used “verbal counting” methodology in which “most/majority” denotes more than 11, “many” refers to more than 7 and “few/several” describes between 2 to 7 teachers.[20]

RESULTS

Participant characteristics

Twenty-six classroom teachers were screened and met inclusion criteria. Interviews with three teachers were not completed due to scheduling conflicts. Interviews with two teachers were not completed due to reaching thematic saturation prior to scheduling their interviews. Our final sample consisted of twenty-one teachers. Most of the interviewed teachers were female and the average time employed at the school was 8.36 years. Characteristics of teachers interviewed are summarized in Table 1.

Interview themes

The interviews produced seven themes representing the classroom teachers’ perspectives on in-school asthma management. The themes included: (1) the process of identifying students with asthma; (2) lack of familiarity with the MAS initiative and poor general knowledge of school policies on asthma management and asthma medication disposal; (3) lack of competency and comfort in managing an acute asthma attack in the classroom and poor recognition of symptoms of an asthma attack; (4) lack of confidence in dealing with a hypothetical asthma attack in the classroom; (5) lack of quick access to asthma medication in school; (6) limited communication between school staff; and (7) enthusiasm about learning more about asthma management. Associated teacher quotes are included in Table 2.

Process of identifying students with asthma

Though schools use a parent-completed “emergency contact card” where they may list child’s health conditions, only a few teachers identified students with asthma through this mechanism. More often teachers learned that a student had asthma through informal conversations with the student, parent, nurse, or when students had asthma symptoms at school. When prompted by the interviewer, many teachers admitted that they could possibly find out about a child’s asthma from their cumulative record file,[21] which tracks students’ attendance and test scores for every school year as well as pertinent personal and medical information as provided by the parents. Most teachers listed at least two of the above modes of obtaining the information and many expressed interest in receiving a list of students with asthma at the beginning of the school year.

Lack of familiarity with DOH MAS initiative and general poor knowledge of school policies

None of the interviewed teachers were familiar with the DOH MAS. Most teachers lacked knowledge of school policies on asthma management. The majority of teachers stated that the nurse administers asthma medication in school. Many teachers reported that students have access to their asthma medication but few reported that it was despite the school’s policy against it. The majority of teachers reported that their school has no written policy on asthma management and few said that there may be one, but they were not familiar with it.

Lack of competency and comfort in managing an acute asthma attack and poor recognition of symptoms of an asthma attack

All teachers had at least one student with asthma in their classroom. Eight teachers admitted to having experience with a child having an acute asthma exacerbation in their class in the past. Many teachers described typical asthma symptoms witnessed in their classrooms, but then denied having had experience with an asthma attack at school. Many teachers did not feel ready to personally assist their students in case of an acute asthma attack.

Dealing with a hypothetical asthma attack in the classroom

When asked what they would do if a student had an acute asthma attack in the classroom, the majority of teachers said that they would call the school nurse and few would send the student to the nurse’s office. Seven of the teachers said that they would also contact the child’s parents, five would call the school main office, and four would call 911. The majority of teachers admitted to feeling unprepared for, and lacked confidence in, handling an asthma attack in their classroom. Some mentioned that they would most likely panic if they had to assist a child during an asthma attack. Out of seventeen teachers who either had asthma or had a family member with asthma, four felt confident about dealing with an asthma emergency in the classroom. However, out of the five teachers who expressed the confidence, four either had asthma themselves or three had a family member with asthma.

Lack of quick access to asthma medication in school

Based on the teacher interviews, not all students with asthma have access to their inhaler in school. There was little agreement amongst teachers on school policies about children having possession of their asthma inhalers on school premises. The majority claimed that the

school nurse administers the medication, but at the same time mentioned that the nurse is not able to do that in the case of a crisis unless MAF (also called 504 form) is on file. Many teachers talked about how it is only a relatively small percentage of students with asthma that have the form on file.

Limited communication between school staff

There is an apparent lack of communication between classroom teachers and other school personnel such as physical education (PE) teachers (also known as “gym” teachers), nurses, school administration, school aides, as well as parents which makes consistent identification and assistance of children with asthma very challenging. Most teachers had no formal way of identifying which of their students had MAF that specified student can carry their asthma pump to school. Additionally, while many teachers mentioned their children having asthma symptoms after recess, few teachers stated that the aides who supervise the students during that time are not aware of which students have asthma. Many of the teachers admitted that they did not know how asthma is managed during gym and that they are not sure about how gym teachers accommodate children with asthma. The majority mentioned failure of parent-school communication. Parents often did not disclose their child's asthma diagnosis and failed to submit a physician-completed MAF to allow administration of asthma medication during school.

Enthusiasm about learning more about asthma management

The majority of teachers were willing to learn more about managing asthma in the classroom, while only one teacher claiming such an option would not be helpful for him/her.

DISCUSSION

We identified several barriers that may contribute to lack of proper in-school asthma management. The majority of teachers felt that they do not have a reliable way of identifying students with asthma and did not feel proficient in recognizing symptoms of an acute asthma attack. The means by which teachers learned of their students' asthma varied greatly. Informal communication with guardians or with the students themselves remained the main method of identification. While the majority of teachers admitted that a student's health conditions could be found in their cumulative records, for most teachers this did not constitute a primary way of identifying children with asthma. The finding that NYC schools struggle with identification of children with asthma is consistent with other studies. [10, 12] Based on data obtained from four NYC schools in 2015, only 26% of students with physician-diagnosed asthma were identified using a school defined methodology. [12]

Six years after the introduction of the DOH MAS, teachers interviewed were uniformly not familiar with it. This finding contrasts with initial optimism surrounding implementation of the DOH MAS guidelines as a way of improving quality of care for students with asthma in NYC public schools [8]. In addition, we found that there was a lack of teacher education on school asthma management policies. Most teachers reported that they are not familiar with any written school procedure on what to do in case of a student's acute asthma attack. Our

findings are consistent with multiple studies showing that US teachers are not familiar with school policies [9, 10] or national guidelines [10, 11] on school asthma management.

On many occasions, teachers denied experiencing a child having an acute asthma attack in their classroom, but then proceeded to describe having witnessed students exhibiting symptoms consistent with an asthma attack. One explanation of this finding is that teachers were not familiar with typical symptoms of an asthma exacerbation, which is consistent with other studies.[22–24] Several teachers admitted to not being comfortable identifying symptoms of an asthma attack. This finding is of concern as teachers who are not able to identify symptoms of acute asthma will likely not be able to effectively assist children who are experiencing an acute exacerbation.

The majority of teachers did not feel prepared to assist a student during a hypothetical asthma attack in the classroom. While studies show that teachers with asthma are more knowledgeable about asthma and its management than those without it,[22, 23, 25] our comparative analysis revealed no correlation between the teacher's asthma status and their confidence in handling an acute asthma attack in the classroom. We did find, however, that of the few teachers who expressed confidence in managing asthma in the classroom, the majority had asthma themselves and/or had a family member with asthma. All teachers said that they would seek assistance of the school nurse in case of a hypothetical acute asthma attack in their classroom. This could present a problem because the student to nurse ratio in NYC schools is 1:1007 [26] (recommended ratio is 1: 750 or no more than 1:225 when students with special health needs are mainstreamed with other students [27]). Additionally, only 41.3% of public schools in the US have a school nurse present on site full time, and many nurses work at multiple schools.[28] The reliance on a school nurse's assistance can become problematic in the context of a shortage of nursing staff and the high prevalence of asthma among schoolchildren.

Teachers in our study were not consistent in recalling school policies regarding children having possession of their asthma inhalers on school premises. While the majority mentioned that they are aware that some children carry their inhaler with them, few stated that this is in direct opposition to the school policy. Most reported that the school nurse administers asthma medication to children. In New York City, an MAF needs to be updated by the child's physician annually and submitted to the school nurse in order for asthma medication to be administered.[8] Without it, the nurse is not permitted to administer medication, even if a student is having an asthma attack. In such cases, school staff has to call Emergency Medical Services. Many of the teachers believed that parents are generally not reliable in submitting the required documentation to the nurse. Another NYC-based study reported that only 27% of children with asthma had an MAF at school, and 15% of parents were not aware of the form.[12] This seriously limits a child's quick access to the asthma medication in case of emergency and can put their well-being at risk. Communication with parents is reported to be poor in other studies [12, 22] and is considered to be a hindrance to effective school asthma management. In addition to assisting in asthma identification and submitting the MAF, parents are the first point of contact in case of emergency or concern about a child for many teachers.

Our study additionally exposed deficiencies in effective communication between classroom teachers and nurses, PE teachers, school aides, and school leadership. Lack of both a streamlined way of sharing information about children with asthma and effective communication of policies and procedures in schools may contribute to deficiencies in asthma management.

Our finding that teachers are open to learning more about asthma management concurs with other studies.[23] This is important in the context of formulating an intervention focusing school staff education about asthma.

In April, 2015, New York State announced new legislation focusing on prevention and management of asthma attacks in New York schools.[29] The School Asthma Management Plan Act allows schools to apply for grants to fund development of asthma management plans based on national guidelines and ensures accessibility to medication and equipment necessary to treat children with asthma on school premises. The Bill has received official support from the American Academy of Allergy, Asthma and Immunology.[29] Our findings characterizing teacher perspectives around barriers to in-school asthma management may help to inform such asthma management plans.

This study should be viewed in the context of a few limitations. The analysis was conducted in Bronx, NY elementary schools, and conclusions may not be generalizable to other schools in different communities. There could be a selection bias as school principals initially identified the teachers and the sample selected may not be representative of all teachers. In addition, the interview process spanned over five months, and teachers could have gained familiarity with topics covered in the interview. Finally, consistent with qualitative research methods, we elicited themes from participants and thus cannot provide quantitative summaries from this work. Trying to quantify qualitative data might be misleading and imply a level of precision that qualitative data is not intended to provide.[30]

CONCLUSIONS

Our findings suggest that there are several ways to improve school asthma management. Instituting a streamlined method of school asthma case identification was proven to be more effective than current student asthma identification methods,[12] and could be a step toward improving outcomes of inner-city children with asthma. All teachers expressed interest in having a list of all students with asthma given to them to make the process of identification easier. Such a list may be an effective way of sharing the necessary information between school staff responsible for the children and minimize discrepancies and inefficiencies of identification of students with asthma through informal means. Additionally, this could alleviate some of the problems associated with poor communication between school staff.

Increasing teacher knowledge and confidence in dealing with episodes of acute asthma attacks in a classroom could lower their reliance on school nurses. Educating school staff and reinforcing the implementation of existing policies and procedures is essential. Studies show that teachers can be effectively educated about how to identify asthma symptoms using didactic means or video instruction.[31] Additionally, an assessment tool of teacher efficacy

and confidence level with regard to managing a child's asthma at school [32] could be helpful in tracking teacher progress and contribute to development of asthma-friendly environment. Our findings will inform the design of an intervention focused on addressing the identified barriers and improving in-school asthma management in concordance with national standards.

Acknowledgments

The authors thank Laurie J. Bauman, PhD, for guidance on the project and interview guide development; Blair Bell and Yudilyn Jaramillo for literature review and assistance with coding of the transcripts; and Dr. Nicole Brown for her review and comments on this paper.

This study was supported by 5K23HD065742 (Reznik: PI) from the National Institutes of Health (NIH) Eunice Kennedy Shriver National Institute of Child Health & Human Development (NICHD). The authors alone are responsible for the content and writing of the paper.

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Table 1

Sociodemographic characteristics of teachers in elementary schools in the Bronx, NY (N=21). *

Characteristic	N	(%)
Mean age, years (SD)	41.43	(10.30)
Female Gender	20	(95.24)
Ethnicity		
Hispanic/Latino	6	(28.57)
Not Hispanic/Latino	15	(71.43)
Race		
African American	7	(33.33)
Caucasian	8	(38.10)
Other	2	(9.52)
Not Specified	3	(14.29)
Grade Taught		
3rd Grade	10	(47.62)
4th Grade	10	(47.62)
5th Grade	2	(9.52)
Special Education Teacher	3	(14.29)
Work Experience		
Years worked in NYC School (SD)	11.14	(6.23)
Years worked in the School (SD)	8.36	(4.29)
Exposure to Asthma		
Self	9	(42.86)
Family member	14	(66.67)
Student	21	(100.00)

* There were 162 public elementary schools in the Bronx, New York with 1,546 3rd–5th grade classes in 2010–2011 school year (the school year during which this study was conducted) [26].

Table 2

Teachers' quotes and associated themes

The problematic process of identifying students with asthma	Teacher 14: "I don't know how they're identified primarily. Um, sometimes I think it's just word of mouth and uh, for example, if I'm talking to the nurse about a particular child, she might mention in passing or I might find out by accident" Teacher 16: "The students will tell them, "I'm not feeling well. My chest is tight," or "I'm wheezing," or "I can't breathe right now." I had a student who came to me the other day and she told me that."
Poor familiarity with the MAS initiative and poor general knowledge of school policies on asthma management	Teacher 20: "You have to balance a rule that makes sense to the safety of the students. If the student has a pump and you know that they take it frequently, you're gonna stop them because their parent wasn't able to get a form – that's just seems real ridiculous. It just seems like counter-productive. So as much as you know and it's, you know, black and white, it's not really." Teacher 21: "There's not a procedure that I can recall. There's a lot of stuff in the staff handbook that maybe I glossed over, but there's no, procedure that I can remember."
The lack of competency in managing an acute asthma attack in the classroom and poor recognition of symptoms of an asthma attack	Teacher 6: "I don't recall. I'm sure I've had students with asthma, but I don't recall like anyone having an attack. No, I mean, aside from like after gym maybe like heavy breathing, needing water." Teacher 7: "I really wasn't honestly aware that that child had such a severe case of asthma. So I just, you know, being a novice, I just said put your head down and rest. I thought maybe he just wasn't feeling well. And then, he was in the hospital for two weeks after that. So I'm very sensitive to children with asthma, because of that situation." Teacher 11: "And when they come in, they're really thirsty and some of them are breathing heavy. I can't say that it was an asthma attack, but they seem a little bit more in distress."
The lack of confidence in dealing with a hypothetical asthma attack in the classroom	Teacher 3: "First of all, I will call the nurse. I will assist the kids, like for example, I understand that asthma is so they can't breathe. So I will try to hold him, but not to do anything, just to hold him, you know, and call the nurse, and send the kids to bring the nurse fast. And also in this case, I will call the next teacher." Teacher 8: "I would be--of course, I'm uncomfortable about it. I wouldn't try to give, you know, any touch in their chest and doing all that, because I don't know a lot about it. I wouldn't do anything that would cause them harm. So the first thing for me would be, as I said, I would contact the office to get help for those people who are experienced. They know how to handle those types of situations." Teacher 20: "Yeah, panic. I think that we all would panic. I don't see how that's something that you could just lightly let pass by and not really feel anxiety or panic about, especially if you have no training. We have no training to know what to do in a case like that. And even if you are a person with your own asthma, you don't... what do you do, so then what do you do?"
The lack of quick access to asthma medication in school	Teacher 10: "No, I think the both occasions we didn't have the 504, so that's why the parents were called to come in. We can't treat them, unless, you know, I guess if they can't call get in contact with anyone and the situation is under control, then they continue to stay in the classroom, but I think otherwise they call 911." Teacher 14: "When I tell students, 'You need to bring a note from the doctor,' I don't usually get the note from the doctor for the inhaler or the pump."
The limited communication between school staff	Teacher 2: "I don't know what the gym teacher does, you know? During gym time, I drop them off there. I don't know if he is aware and he knows who is asthmatic and who is not asthmatic. That's maybe another concern that needs to be brought up, you know, that they need to have their list per class, you know, which kids are asthmatic and which are not. Again, it's word of mouth, whatever the child tells the teacher." Teacher 18: "I mean, I can't see how, you know, the school aides who are out there would know of all the medical issues of all the students that are out there at one point in time. There's a lot of kids out there."
The enthusiasm about learning more about asthma management	Teacher 5: "I think it would be helpful if we had some workshops or some information, because I don't think I just- I have experience because I happen to have asthma. So I kind of know what to do, and also I have a daughter who has asthma. But as far as the--in general teachers, I don't think everybody would know what to do" Teacher 12: "I think that training for the teachers is super important. So I think that is really important what you would do if an attack happens in your classroom, you know, for teachers, even school aides, which anybody who deals with these kids at any time it could happen, you know, what do we do?"