RESEARCH ARTICLE

KNOWLEDGE, ATTITUDES AND PRACTICES IN MANAGEMENT OF ACUTE OTITIS MEDIA AMONG HEALTH CARE PROVIDERS AT THREE PUBLIC HOSPITALS IN NAIROBI, KENYA: A CROSS SECTIONAL STUDY

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ABSTRACT

Background: Acute Otitis Media (AOM) is among the commonest indications for antimicrobial use. However, due to poor knowledge and attitudes of clinicians towards set guidelines, there is growing concern over inappropriate antimicrobial use with resultant resistance.

Objective: The aim of the study was to determine the knowledge, attitudes and practices of clinicians in management of AOM in three public hospitals in Nairobi, Kenya.

Design: This was a cross-sectional hospital based Knowledge, Attitude and Practice (KAP) study.

Methods: One hundred and fifty-one clinicians were recruited by purposive sampling. The study was conducted in the form of a pre-tested questionnaire.

Results: Only two ENT consultants knew the correct criteria of diagnosing AOM as outlined by CDC. Twenty-eight (18.5%) clinicians were familiar with the watch and wait practice while 78.8% would immediately prescribe antibiotics for AOM. Thirty-five percent and 33.1% of the clinicians knew the first line and second line antimicrobial agents respectively in treating AOM with 17.9% and 24.5% knowing the correct dose of first line and second antimicrobial agents respectively. Consultant ENT surgeons had the best knowledge, attitude and practice concerning AOM management.

Conclusions: Only three of the study participants knew the CDC criteria on management of AOM. Majority of the clinicians used non-specific signs and symptoms that were not sufficient to diagnose AOM before commencing antimicrobial treatment with little role for watchful waiting. Most of the clinicians expressed concerns over complications of AOM as the reason behind immediate use of antimicrobials.

Key words: Knowledge, Attitude, Practices, Acute otitis media, Public hospitals

INTRODUCTION

Acute Otitis Media (AOM) is an inflammatory process of the middle ear cleft defined by a rapid onset and lasting less than 3 weeks[1]. These infections are a frequent cause of absenteeism from school among school going children[2]. Ear infections, such as AOM, are of great concern especially in the developing world, as they may cause retarded language development and progress in school among children[3]. Over-diagnosis and over-treatment with broad based antimicrobials are often thought to occur in management of this condition. Otoscopy classically shows a thickened hyperemic tympanic membrane which is immobile on pneumatic otoscopy. The CDC recommends that AOM should not be diagnosed without visualization of middle ear fluid confirmed by pneumatic otoscopy or tympanometry[4].

Treatment of AOM entails stepwise treatment modalities for different severity scales of the infection. Children aged two years or more as well as adults without co-morbidities and with non-severe illness (mild otalgia and fever less than 39°C) can benefit from watchful waiting with use of analgesics/antipyretics but no antibiotics because AOM symptoms improve in most cases within 1–3 days. This is, however, not recommended for children less than 2 years old if AOM is certain (moderate or severe otalgia or temperature greater than 39°C)[4].

High-dose amoxicillin (70–90 mg/kg/day in children) or 500mg three times daily for adults is recommended as first-line treatment for seven to ten days. High dose amoxicillin-clavulinic acid (70-90mg/kg/day in children or 1 gram twice daily in adults) is recommended as second line treatment for seven days[5]. High dose cefuroxime (30mg/kg/day in children or 500mg twice daily in adults) for seven days may be used as an alternative to amoxicillin-clavulinic acid as second line treatment.

MATERIALS AND METHODS

This was a prospective cross-sectional study carried out at Kenyatta National Hospital, Mbagathi District Hospital and Mama Lucy Kibaki Hospital. All three are public facilities within Nairobi, Kenya. The study population comprised of interns, physicians, paediatricians, clinical officers and ENT surgeons,

except those who were working in the ENT department at the Kenyatta National Hospital. Informed consent was obtained from the clinicians who qualified to participate in the study. Ethical approval was obtained from the Kenyatta National Hospital Ethics Committee.

RESULTS

Majority of the study participants were post graduate students whereas the consultants accounted for the least.

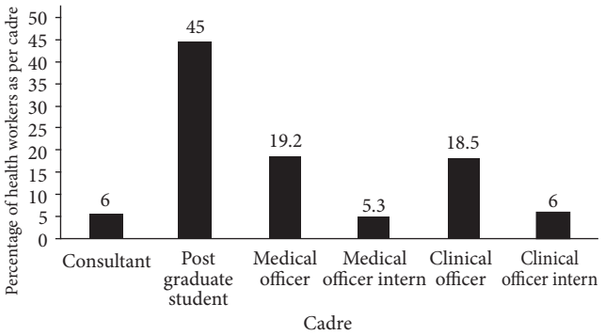


Figure 1: Study participants as per cadre

Nearly half of the study participants (51%) had less than 7 years of clinical experience. Fever, otalgia and erythematous tympanic membrane were the most commonly used symptoms for diagnosing acute otitis media.

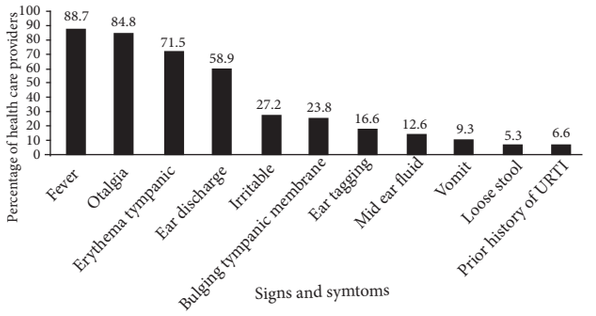


Figure 2: Signs and symptoms used by health care providers in diagnosing AOM

From a total of 151 health workers, 78.8% would immediately prescribe antibiotics for patients presenting with features of AOM. Only twenty eight (18.5%) health workers would adopt for watchful waiting prior to starting antimicrobials.

Approximately one-third of clinicians used amoxicillin as first line and amoxicilin-clavulanic acid as second line treatment for both adults and paediatric patients. Three (2.0%) health workers reported that they were aware of the CDC criteria in AOM management, who included two consultants and a medical officer. Only the two ENT consultants correctly knew the CDC criteria for diagnosing and managing AOM (Table 1).

Table 1: Correct antibiotic dosing per department

			Post graduate paediatrics	Post graduate internal medicine	Consultant ENT	Consultant paediatrics	Consultant internal medicine	Total
Amoxicillin	Adult	Yes	2(1.3)	8(5.3)	2(1.3)	0(0.0)	2(1.3)	14 (9.3)
		No	31(20.5)	27(17.9)	0(0.0)	2(1.3)	3(2.0)	63 (41.7)
		P-value	0.005					
	Paediatric	Yes	8(5.3)	0(0.0)	2(1.3)	0(0.0)	0(0.0)	10 (6.6)
		No	25(16.6)	35(23.2)	0(0.0)	2(1.3)	5(3.3)	67 (44.4)
		P-value	< 0.001					
Amoxicillin Clavulanate	Adult	Yes	7(4.6)	13(8.6)	2(1.3)	0(0.0)	0(0.0)	22 (14.6)
		No	26(17.2)	22(14.6)	0(0.0)	2(1.3)	5(3.3)	55 (36.4)
		P-value	0.068					
	Paediatric	Yes	8(5.3)	0(0.0)	2(1.3)	0(0.0)	0(0.0)	10 (6.6)
		No	25(16.6)	35(23.2)	0(0.0)	2(1.3)	5(3.3)	67 (44.4)
		P-value	<0.001					
Cefuroxime	Adult	Yes	7(4.6)	12(7.9)	2(1.3)	1(0.7)	4(2.6)	26 (17.2)
		No	26(17.2)	23(15.2)	0(0.0)	1(0.7)	1(0.7)	51 (33.8)
		P-value	0.024					
	Paediatric	Yes	6(4.0)	1(0.7)	2(1.3)	1(0.7)	0(0.0)	10 (6.6)
		No	27(17.9)	34(22.5)	0(0.0)	1(0.7)	5(3.3)	67 (44.4)
		P-value	<0.001					

Sixty-six percent of the clinicians considered coverage of target micro-organisms as the reason behind choice of treatment, while 13.2% and 25.2% considered appropriate use of antimicrobials and prevention of resistance respectively.

DISCUSSION

The CDC is a United States federal agency that protects public health through disease control and prevention both in the US and internationally. Being an integral part of WHO, guidelines set by CDC are used globally. Institutions may have their own guidelines with regard to different diseases but these are often similar to CDC guidelines in many ways. CDC guidelines are considered the gold standard in most situations. The challenge with adopting such for the developing world countries is in relation to availability of required facilities to comply. The local Kenyan guidelines do not give concise adult or paediatric doses of antimicrobials as well as varied choices of antimicrobials in treating AOM hence heavily relying on CDC or American Academy of Paediatrics

In this study, only three (2%) health workers reported that they were aware of the CDC criteria on AOM management. This is in contrast to Garbutt *et al*[6] in United States of America, who found that 90% of the study participants were aware of the CDC criteria and had read it. The study subjects in this case were paediatricians and were therefore more likely to have read the guidelines since AOM patients are often managed by paediatricians. This Kenyan study had 53 paediatricians out of whom none was aware of CDC guidelines on AOM. This might explain the reliance of study participants on wrong symptoms and signs to diagnose AOM. CDC recommends that a diagnosis of AOM should not be made without verification of middle ear fluid by either pneumatic otoscopy or tympanometry. Although the availability of pneumatic otoscope or tympanometry was not sought in the study, the situation on the ground is that the pneumatic otoscope is not available in the clinic settings of the three public hospitals. Tympanometry is available at KNH but at a fee hence restricting its accessibility. This does not, however, explain the lack of knowledge regarding their significance in the diagnosis of AOM.

CDC specifies situations when antibiotics may not be prescribed for AOM. This is not always adhered to for different reasons. A significant proportion (78.8%) of the clinicians in this study immediately prescribed antibiotics for all their patients with AOM. Guillermo[7] reported pressure from parents, concerns over litigation and parent or patient satisfaction as reasons for non-adherence to this recommendation. In this study, the main reason for immediate antibiotic prescription was avoidance of complications.

The CDC recommends the use of amoxicillin at 90mg/kg/day for 7 to 10 days. A very low percentage of health workers in the study prescribed correct doses of amoxicillin in adult patients (17.9%) and paediatric patients (9.9%). This is in sharp contrast to a study by NoaShviro *et al*[8] in a study on health care providers in Southern Israel where 75% amoxycillin was the first line drug of choice among the study subjects but only 17.9% and 9.9% knew the correct dose for adults and children respectively. This is in sharp contrast to a study by NoaShviro *et al*[8] in a study on health care providers in Southern Israel where 75% of study participants prescribed the correct dose of amoxicillin in AOM treatment.

Varying reasons why spectrum of antimicrobial agent was important were given. Majority (66.2%) considered coverage of target organisms important while 25.2% considered prevention of resistance as the reason why spectrum antimicrobials is important. In the study by Guillermo[7], antibiotic spectrum was generally not considered as important as choosing a drug known to successfully treat AOM.

The study also shows that clinician qualification was significantly associated with correct paediatric amoxicillin dosing ($p < 0.001$), correct paediatric amoxicillin clavulanate dosing ($p < 0.001$) as well as correct paediatric cefuroxime dosing ($p < 0.001$).

CONCLUSION

Based on the above results, it is notable that only a marginal number of health workers in the three public hospitals know or apply the CDC guidelines on management of AOM.

RECOMMENDATION

The country needs to put in place appropriate guidelines that can be used to manage AOM while at the same time ensuring that the gold standard recommendations are taught in the clinical areas.

Conflict of interest: The authors declare that there was no conflict of interest.

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