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Parental contribution to over prescription of antibiotics for sore throat in children

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Abstract: *Introduction:* Antibiotics are often prescribed by physicians for sore throat in children because of the danger of post streptococcal complications. The role of the parents in over prescription of antibiotics is less well known.
Objective: To evaluate the knowledge, attitudes and practice of parents to antibiotic prescription for childhood sore throat.
Methods: The subjects were parents who brought their children to the out-patient clinics of a tertiary hospital. Their knowledge, attitude and practice of antibiotics prescription for sore throat in children were evaluated with the aid of a questionnaire. Responses were analyzed with IBM-SPSS version 20.0. The responses were presented in simple percentages while differences in proportions were tested with χ^2 test.
Results: There were 309 respondents studied, of which 264 (85.4%) were mothers. Respondents were aged 20 to 64 years. While 54.0% of respondents believed sore throat may resolve without antibiotics, 69.4% also felt that every child with sore throat should receive antibiotics. Some 57.2% of respondents will request for antibiotic. More respondents with secondary (59.0%) and tertiary (56.6%) levels of education compared to primary (20.6%) level would not request for antibiotics, P = <0.001. 42% will not be satisfied with a physician who does not prescribe antibiotics.
Conclusion: This study demonstrated parental irrational demand for antibiotic for sore throat in children. This attitude was more in less educated parents. Education of the parents about the aetiology and rational antibiotic use of sore throat in children will mitigate this behavior.

Keywords: Sore throat; antibiotic over prescription; knowledge; attitude, parents

Introduction

Pharyngitis or sorethroat is a common childhood illness which presents with cough fever and pain[1]. When caused by group A β haemolytic streptococcus, it may result in rheumatic fever and acute glomerulonephritis after the acute illness[2]. Rheumatic heart disease which is a debilitating chronic sequala of rheumatic fever may also occur[2]. In an effort to prevent these late complications, physicians often prescribe antibiotics for sore-throat with or without establishing if the causative organism is bacterial[3,4] . However it is well known that majority of sore-throat are caused by viruses rather than bacteria and as such does not require antibiotics in most cases[5]. In a previous study conducted in the same study locale, it was found that physicians tended to misuse and over-prescribe antibiotics for sore-throat[3].

The unnecessary antibiotic prescription for sore-throat contributes to antibiotic resistance. The resistance of various organisms to the commonly used antibiotic has been demonstrated in earlier reports[6,7]. Thus the available sensitive antiobiotics are the more expensive newer medicines, which are beyond the reach of most Nigerians. It is thus imperative that efforts are made to prevent antibiotic resistance in our environment.

The demand by parents on physicians to prescribe an antibiotic for sore-throat in their children has also been documented as contributing to the unnecessary antibiotic prescription for sorethroat[3]. Whilst the role physicians' play in over prescription of antibiotic has been identified in Nigeria[4], there is paucity of literature on the role of the Nigerian parents. In this study, we evaluated the knowledge and attitude of the parents of children attending the paediatric clinics and wards on treatment of sore-throat, antibiotic prescription and attitude to their physicians.

Methods

The respondents were parents of children visiting the paediatric out-patient clinics and children's emergency room of the University of Benin Teaching Hospital, Benin City. A convenience sample size of 320 respondents was consecutively recruited from the wards and clinics, over a period of six months – July to December 2013. The knowledge and attitude of respondents to antibiotic prescription for sore-throat in their children was evaluated in this study using a semi-structured interviewer administered questionnaire. The questionnaires were administered by four trained interviewers who are medical doctors. The questionnaire was pre-tested on 40 respondents to collate the various types of responses and ensure there is consistency in the understanding of questions and their responses by respondents.

The questionnaire is divided into two sections. The first section sought for information on biodata, the educational level and socio-economic statuses of the respondents. The socio-economic class (SEC) of the respondents was determined using the method described by Olusanya et al[8]. Respondents were also asked if they thought sore-throat should be treated and the reasons they felt it should be treated.

The second section evaluated the knowledge on antibiotic use in sore-throat, potential complications from sore -throat and attitude towards their physicians' prescription or non-prescription of antibiotic for their children's sore-throat. The responses were organized into a 3 likert's scale consisting of agree, not sure and disagree to the questions.

Statistical analysis

The responses were coded and entered into a spread sheet using IBM-SPSS version 20.0 Chicago IL. Analysis was done with the same tool. The responses of the different categories of respondents were presented in simple percentages. The differences in proportion were tested by χ^2 test. The level of significance was set at $P < 0.05$.

Results

Characteristics of the respondents

Of the 320 questionnaires administered, 11 respondents declined the interview giving a response rate of 96.6%, a total of 309 respondents were thus studied. The respondents consisted of 264 (85.4%) mothers and 45 (14.6%) fathers. The respondents were aged between 20 and 64 years with a median age of 32.0 years. The respondents aged <30 years were 125(40.4%), 30 – 39 years were 142(46.0%) and 42(13.6%) were 40 years or older. The majority of parents 177(57.3%) had tertiary level of education, while 108(34.9%) and 24(7.8%) had secondary and primary levels of education respectively. Most of the respondents 139 (45.0%) were from high SEC, 87 (28.1%) and 83 (26.9%) were from middle and low SECs respectively. Of the 309 parents, 204 (66.0%) had children who were at least 5 years old. Of which 143 (70.1%) had had sore-throat in the past.

Knowledge of treatment of sore-throat

Of the 309 respondents in this study, 272(88.0%) thought that sore-throat should be treated; of these, 262 (84.8%) thought it should be treated to ease discomfort, 103 (33.3%) to prevent spread to other children and 186 (60.2%) to prevent complications (some respondents gave multiple responses).

Most respondents 213(69.4%) felt every child with sore-throat should have an antibiotic, 166(54.0%) believed sore-throat may resolve without antibiotics while 264 (86.6%) would take their child to see a doctor to prevent potential complications. The responses of the respondents to other knowledge related questions are presented in table 1.

Parental attitudes to antibiotics for sore-throat

Some 174(57.2%) respondents will request for an antibiotic for their child's sore-throat while 129(42.2%) will not be satisfied with a doctor who does not prescribe an antibiotic for their child's sore-throat. Seventy (22.7%) respondents would change their doctors for not prescribing an antibiotic. Table 1.

Table 1: Parents knowledge and attitude towards antibiotic prescription for sore-throat

Questions n = number of responses	Responses Agree	 not sure	 Disagree
Every child with ST should have antibiotic (n = 307)	213(69.4)	40(13.0)	54(17.6)
ST may resolve without antibiotic (n = 307)	166(54.0)	65(21.2)	76(24.8)
See a doctor to prevent potential complication from ST? (n=305)	264(86.6)	17(5.6)	24(7.8)
Would you request for antibiotic for your child with ST? (n= 304)	174(57.2)	43(14.1)	87(28.6)
Satisfied with a doctor who does not prescribe antibiotic for ST? (n=306)	127(41.5)	50(16.3)	129(42.2)
Would you see another doctor to get antibiotic for ST? (n = 304)	121(39.8)	43(14.1)	140(46.1)
Would you change your doctor for not prescribing antibiotic for ST?(308)	70(22.7)	44(14.3)	194(62.9)
Is your child receiving too much antibiotic when prescribed for ST? (n=302)	27(9.0)	88(29.1)	187(61.9)
Do you think too much antibiotic is bad for your child? (n=305)	194(63.6)	53(17.4)	58(19.0)

ST = sore-throat

More respondents from the secondary and tertiary levels of education 59.0% and 56.6% respectively compared to 20.6% with primary level of education would not request for antibiotic , $P < 0.001$. Table 2.

Older respondents 71(52.2%) in the 30 – 39 years age group and 22(57.9%) ≥40 years compared to younger respondents aged ≤30 years 40(33.9%) would see another doctor to get an antibiotic prescription, $P = 0.011$. Table 3. There was no significant gender difference in the responses to questions on attitude to antibiotic prescription. table 4.

Table 2: Parents' attitude to antibiotic prescription for sore-throat by level of education

Questions n = number of responses	LOE	Responses Agree	Not sure	Disagree	P value
Would you request for antibiotic for your child with ST? (n= 304)	Pri	7(11.1)	43(68.3)	13(20.6)	
	Sec	24(22.9)	19(18.1)	62(59.0)	<0.001
	Ter	56(32.0)	20(11.4)	99(56.6)	
Satisfied with a doctor who does not prescribe antibiotic for ST? (n=306)	Pri	9(37.5)	3(12.5)	12(50.0)	
	Sec	47(43.9)	21(19.6)	39(36.4)	0.63
	Ter	73(41.7)	26(14.9)	76(43.4)	
Would you see another doctor to get antibiotic for ST? (n = 304)	Pri	11(45.8)	6(25.0)	7(29.2)	
	Sec	39(37.1)	19(18.1)	47(44.8)	0.053
	Ter	90(51.4)	18(10.3)	67(38.3)	
Would you change your doctor for not prescribing antibiotic for ST?(308)	Pri	16(66.7)	3(12.5)	5(20.8)	
	Sec	64(59.8)	13(12.1)	30(28.0)	0.057
	Ter	112(64.0)	28(16.0)	35(20.0)	
See a doctor to prevent potential complication from ST? (n=305)	Pri	4(17.4)	1(4.3)	18(78.3)	
	Sec	8(7.5)	8(7.5)	90(84.9)	0.36
	Ter	12(6.8)	8(4.5)	156(88.6)	

LOE = Level of education; Pri, Sec and Ter = primary, secondary and tertiary levels of education respectively.

Table 3: Parents' attitude to antibiotic prescription for sore-throat by age group

Questions n = number of responses	Age (yrs)	Responses Agree	Not sure	Disagree	P value
Would you request for antibiotic for your child with ST? (n= 304)	<30	31(26.5)	10(8.5)	76(65.0)	
	30-39	47(34.3)	25(18.2)	65(47.5)	0.031
	≥40	8(20.5)	6(15.4)	25(64.1)	
Satisfied with a doctor who does not prescribe antibiotic for ST? (n=306)	<30	56(47.5)	19(16.1)	43(36.4)	
	30-39	54(39.4)	18(13.1)	65(47.4)	0.15
	≥40	15(39.5)	10(26.3)	13(34.2)	
Would you see another doctor to get antibiotic for ST? (n = 304)	<30	40(33.9)	17(14.4)	61(51.7)	
	30-39	71(52.2)	20(14.7)	45(33.1)	0.011
	≥40	22(57.9)	5(13.2)	11(28.9)	
Would you change your doctor for not prescribing antibiotic for ST?(308)	<30	59(66.7)	21(12.5)	37(20.8)	
	30-39	99(59.8)	14(12.1)	24(28.0)	0.006
	≥40	28(71.8)	5(12.8)	6(15.4)	
See a doctor to prevent potential complication from ST? (n=305)	<30	4(3.4)	7(6.0)	106(90.6)	
	30-39	12(8.8)	5(3.7)	119(87.5)	0.36
	≥40	7(17.9)	3(7.7)	29(74.4)	

Table 4: Parents' attitude to antibiotic prescription for sore-throat by gender of parent

Questions n = number of responses	Parents	Responses Agree	Not sure	Disagree	P value
Would you request for antibiotic for your child with ST? (n= 304)	Father	10(22.2)	9(20.0)	26(57.8)	
	Mother	77(29.7)	34(13.2)	148(57.1)	0.36
Satisfied with a doctor who does not prescribe antibiotic for ST? (n=306)	Father	21(47.7)	3(6.8)	20(45.5)	
	Mother	108(41.2)	47(18.0)	107(40.8)	0.18
Would you see another doctor to get antibiotic for ST? (n = 304)	Father	25(56.8)	5(11.4)	14(31.8)	
	Mother	115(44.2)	38(14.6)	107(41.2)	0.30
Would you change your doctor for not prescribing antibiotic for ST?(308)	Father	33(73.4)	6(13.3)	6(13.3)	
	Mother	159(60.9)	38(14.6)	64(24.5)	0.21
See a doctor to prevent potential complication from ST? (n=305)	Father	4(8.9)	2(4.4)	39(86.7)	
	Mother	20(7.7)	15(5.8)	225(86.5)	0.91

Discussion

In this study, almost 70% of the respondents believe that every child with sore throat should have antibiotics. This high proportion is consistent with the finding in a study conducted in Port Harcourt, Nigeria where 83.7% of children < 5 years were prescribed antibiotics for upper respiratory tract infections[9]. The value in this study is however higher than the 29% reported from a Malaysian study[10]. The higher proportion in the present study may stem from the belief that most people in the locality believe that antibiotic is required for most illnesses, this is more so as it is readily available over the counter[11]. Over half of the respondents believe that the sore-throat will resolve without antibiotics. This was in contrast with their belief that sore-throat should be treated with antibiotics.

Also in contrast with their belief in the spontaneous resolution of sore-throat is that over half of the respondents would request for antibiotic from their physician in this study. Moreover majority of the respondents did not think that the receipt of antibiotics for sore-throat in their children constituted over prescription. The number of respondents requesting for antibiotic in this study is higher than the 28% in a Malaysian study[10] and the 24% in a Greek study[12] where the parents thought that antibiotic was part of the treatment for upper respiratory tract infection. The lower value in the Greek study is because of the better education of the parents with regards to upper respiratory tract infections and their willingness to follow their physicians' instructions[12]. In this study, the more educated parents were less likely to request for antibiotic, suggesting that education may have influenced their disposition to request for antibiotic.

Although most upper respiratory tract infections including sore-throat are caused mostly by viruses, the fear of possible complication of group A streptococcal pharyngitis may have encouraged treatment with antibioitics for all cases of sore-throat in our environment where rheumatic heart disease is endemic. This is against the situation in western countries where rheumatic heart disease is almost non-existent and it is easier to promote non-prescription of antibiotics for sore-throat. However in the face of the growing antibiotic resistance and the attendant complications, prescription of antibiotics for all cases of sore-throat will not be justified even in our environment. Clearly, measures to reduce antibiotic prescription for sore-throat without undulling exposing a possible case of bacterial pharyngitis to complications of rheumatic fever and acute glomerulonephritis need to be put in place in the country.

Waiting for microbiological confirmation of bacterial infection where the facility is available, may be impracticable as decision on the need for or against antibiotics prescription have to be taken empirically at the first visit since the patient may not make the second visit 48 hours later. The use of a clinical decision rule by the physician such as the modified Centor criteria[13], will reduce significantly the number of sore-throat cases for which antibiotics are needlessly prescribed for[14]. The clinical rules are usually locale specific and since there is none in Nigeria yet, use of the available rule in our setting may produce incorrect results. Use of rapid diagnostic testing for group A streptococcus may be the way for-

ward in our environment since it does not require high level of technical skill to perform and results are available within a short time. There is a need for a national policy on antibiotic treatment of upper respiratory tract infections including sore-throat that provides a more rational antibiotic treatment of upper respiratory tract infections. This recommendation has been made in earlier paper on the subject[14]. The populace should also be educated about such policy and thus reduce demand for antibiotics.

It would appear that lack of knowledge or fear of complications is also engendering other negative behaviours. For instance, almost a quarter of the respondents in this study would change their children's physician if they did not prescribe an antibiotic. Such attitude puts undue pressure on the physicians, especially the private practitioner, who in a bid to retain their clientele might be pressured to prescribe unnecessary antibiotics for every sore throat. This attitude of unrealistic parental expectation contributing to inappropriate antibiotic prescription has been reported by another worker[15]. The actual request for antibiotic prescription for nonspecific upper respiratory tract infection had been reported to have influenced 49% of physicians' prescription of antibiotic in another study.[16]

In this study, 42% of the respondents would not be satisfied with a doctor who does not prescribe antibiotics for sore throat. This perception of satisfaction linked with physicians' prescription of antibiotic is different from findings in a study from a western country where parents satisfaction correlated with time spent with physicians rather than on prescription of antibiotics[17]. The attitude expressed by the western parents may stem from better understanding of the disease process, the need for and danger of inappropriate antibiotic prescription. This further emphasizes the need for education of our parents about the causes of upper respiratory tract infections, indication for antibiotic prescription and the danger of indiscriminate antibiotic prescriptions. The irrational parental demand for antibiotics may stem from a desire for their child to get better faster. Parental education on the aetiology and natural history of sore-throat may change the extant attitudinal disposition. Recommending other alternatives such as home fluids, soothing remedies may relieve demands for antibiotics.

In this study, the modality for data collection was by interviewer administered questionnaire. This was to ensure that the meaning of questions was similarly presented to the respondents irrespective of the level of education and that all the questions were responded too. In a self-administered questionnaire, the understanding of the questions might be influenced by level of education of the respondents and as such influence the responses.

Conclusion

In conclusion, the knowledge that most sore-throat are self-limiting because of their viral aetiology,[5] did not seem to affect the disposition of the parents studied to antibiotics use. Studies are needed to understand the reasons for the incongruence in belief and practice. We recommend the development of a national policy on antibiotic treatment of upper respiratory tract infection including sore-throat and the health education of parents on aetiology of sore-throat and irrational antibiotic use. Such education should be emphasized in the individual parent where the child has a sore-throat.

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