ORIGINAL ARTICLE

Parental Use of Antibiotics as Self Medication to Their School Going Children: A Cross Sectional Study

Yugantara R. Kadam[1], Aniruddha N. Pimple[1], Girish B. Dhumale[1], Alka D. Gore[1], Saket A. Patil[1]*

[1]Department of Community Medicine, Bharati Vidyapeeth (Deemed to be University) Medical College & Hospital, Sangli-416416 (Maharashtra) India

Abstract

Background: Self-medication with antibiotics constitutes a major form of irrational use of medicine and it is associated with risk of developing antibiotic resistance. Parents many times use antibiotics as self medication for their children which is hazardous. There is a need to find out such practices if they are happening. *Aim and Objectives:* to find out the prevalence and practices of antibiotics use as self medication in children amongst the parents and reasons for the same. *Material and Methods:* It was a cross-sectional study. Schools from Sangli-Miraj-Kupwad Corporation area were the study place. Parents of primary and secondary school students were the study subjects. The sample size was 1407. Cluster sampling method was used. The study duration was of 6 months. The questionnaire was used as a study tool. *Results:* The prevalence of non prescriptional parental use of antibiotic for school going children was 22.8%. Most common symptom treated was runny nose (41.43%). Majority parents (35.51%) selected antibiotic by using their own experience. Commonest reason was 'convenience' (27.72%). Gender and type of family are the strong predictors for self-medication with antibiotic for children. *Conclusion:* Parental use of non prescribed antibiotic was high. Risk for parental use of self medication was high with nuclear families and mothers.

Keywords: Parent Self-Medication, Self Medication to Children, Non Prescriptional Use of Antibiotic.

Introduction:

World Health Organization (WHO) defines self care as what people do for them to establish and maintain health, prevent and deal with illness. This is a broad concept and includes self medication as one of the element. WHO defines self medication as the selection and use of medicines by individuals to treat self recognized illness or symptom [1]. WHO also provides a concept of 'Responsible self medication' stating that it is a practice whereby individuals treat their ailments and conditions with medicine which are approved and available without prescription, and which are safe and effective when used as directed.

There has been an increasing trend of practicing Self Medication (SM) in both developed and developing countries. Unsupervised Antibiotics use with its improper and irrational selection criteria for self medication and with incomplete dosage has resulted in development of drug resistance. This class of drugs should be used by counseling with the registered physicians. Self medication with antibiotics has been widely reported leading the WHO to call attention to the dangers of self medication as a cause of antibiotic resistance [2].

National Policy for Containment of Antimicrobial Resistance, India 2011 states that self medication with antimicrobial by the general public should be discouraged and action to ban the over the counter sale of antimicrobials should be taken [3].

Some studies have also found parental use of antibiotic for their children as an SM [4-6]. There is a report stating that high levels of antibiotic resistance and high prevalence of multidrug resistant strains were found among respiratory pathogens in children treated with antibiotics frequently without consulting doctors. This is a threat to the efficacy of the antibiotics [7].

That is why, this study was planned to know the prevalence of self medication with antibiotic for children and the conditions for which it is used and related practices and associated socio-demographic factors for the same.

Material and Methods:

This was a cross sectional study conducted in primary and secondary schools of Sangli, Miraj, Kupwad Corporation area. It was decided to contact the parents in schools when they visit the school for parents' meet. Calculated sample size was 1400 considering p= 11% [4] (α= 95% and β=15%). Questionnaire was prepared with the help of experts and references. Pilot study was conducted to finalize the questionnaire. Reliability was tested by using Split-half method and it was 0.79. Random selection of schools was done from a list of primary and secondary schools till the desired sample size was achieved.

After getting Institutional Ethics Committee (IEC) clearance the principles of concerned schools were contacted for permission. They were explained the purpose of study and permission was sought. Data collection was done in the classroom at the time of 'Parent-Teacher meeting'. Parents were explained the purpose of study and about the voluntary participation. After taking the consent of the willing parents, questionnaire was distributed. Total 4 schools were included so as to satisfy the sample size. The first question in the questionnaire (Do you know antibiotic?), was to ensure the parents' knowledge of antibiotic. If answer was yes, then participants were asked to give a name of at least one antibiotic. Those who answered correctly were included in the study. For the study purpose self-medication for antibiotic was defined as use of antibiotic, in the past 6 months, with one's own accord, which was not prescribed by a doctor. A time period of 6 months was chosen to reduce the recall bias.

Statistical analysis:

Descriptive (Percentages) and inferential analysis was done by using chi square test and binary logistic regression analysis with the help of SPSS 22.0.

Results:

A total of 1407 parents were included in the study that knew antibiotics and were able to name the antibiotics or their brand names. Out of which 321 (22.81%) used antibiotic as SM for their own child. So the prevalence of use of antibiotic as a SM for school going children by their parents was 22.8%. Out of 321 parents who used antibiotic as SM for children, 146 (45.5%) were mothers and 175 (54.5%) fathers.

The mean age of parents using antibiotics as SM was 41.95 ± 5.41 years with a minimum age of 26 and maximum 62 years. Most common family type was nuclear (274, 85.36%). All parents were literate. Minimum education was primary and there were only 9 (0.64%) parents who had primary education only. A majority of parents had education up to graduation (607, 43.14%). The percentage of unemployed participant was 6.54% (n=92). Service was the most common occupation

(697, 49.54%). Maximum number of parents (708, 50.3%) belonged to nuclear families.

The most common symptom for which antibiotic was used as self medication for children was running nose (133, 41.43%), followed by cough (95, 29.60 %). This indicates Acute Respiratory Infection (ARI) was the common condition for the usage of antibiotic as self medication (Table 1).

For selection or choice of antibiotic, parents have used various ways. The majority parents (114, 35.51%) selected antibiotic by using their own experience while second most common method was use of previous prescription given by doctor for similar complaints (105, 32.71%) (Table 1).

The most common reason stated by parents for self medication of antibiotic for children was 'convenience' (89, 27.72%), followed by lack of time to consult the doctor (46, 14.33%) (Table1).

The antibiotic which was used for self medication was either purchased from local pharmacy (58.26%) or left over from previous prescription (112, 34.89%) (Table 2).

Dose of antibiotic was decided by parents most commonly on the basis of their previous experience (430, 30.56%) or by checking the package insert (95, 29.60%). In case of no relief, antibiotic was changed for other antibiotic by 82 parents. Only 45% of parents have stopped antibiotic at the completion of the course (Table 2).

About 60% of parents opined that they would consult doctors in case of presence of adverse effects. More than 70% of parents have not responded for a question about consultation of a doctor in case of no improvement (Table 3).

On analysis to identify the socio-demographic determinants for self medication with antibiotic for children it was found that age, sex and family type were significantly associated with self medication. Practice of self medication with antibiotic for children was significantly common in parents in the 36-45 years age group (22.8%, χ^2=9.53, p=0.023). Mothers were significantly using self medication for their children than fathers (33%, χ^2=38.20, p=0.000). Parents belonging to nuclear family were using antibiotic for their children as self medication significantly more common than joint family (38.7%, χ^2=204.23, p=0.000). There was no significant association between practice of self medication with antibiotic for children and education and occupation (Table 4).

Binary Logistic Regression Analysis was done by using socio-demographic factors to find out the strong predictor for self medication with antibiotic for children. It was found that gender and type of family are the strong predictors. Mothers and parents from nuclear family are significantly more commonly involved in self medication practice with antibiotic for their children (Table 5).

According to 215(66.98%) parents self medication with antibiotic was not an acceptable practice. Inspite of that they were observing this practice for their children. Out of remaining parents 38 (11.84%) feel self medication with antibiotic is acceptable practice and according to 16 (4.98%) it is a good practice.

Table 1: Frequency Distribution of Self Medication to Children according to Illness, Choice of Antibiotics and Reasons

Practice		Frequency	Percentage
1a. Symptoms for which self medication used	Runny nose	133	41.43
	Cough	95	29.60
	Sore throat	22	6.85
	Fever	44	13.71
	Vomitting	72	22.43
	Diarrhoea	19	5.92
	Bodyache	22	6.85
	Skin wounds	63	19.63
1b. Choice of antibiotic	My own experience	114	35.51
	Previous doctor's prescription	105	32.71
	Recommendation by pharmacists	50	15.58
	Recommendation by net citizens	29	9.03
	Opinion of family members/friends	26	8.10
	The advertisement	6	1.87
1c. Reasons of self medication	Not answered	177	55.14
	Convenience	89	27.72
	Lack of time to consult doctor	46	14.33
	Cost saving	19	5.92

Table 2: Frequency Distribution According to Various Practices Related with Self Medication

Practices Related With Self Medication		Frequency	Percentage
Source of antibiotic	Local pharmacies	187	58.26
	Leftover from previous prescription	44	34.89
	Online shopping	16	4.98
	Others	6	1.87
Decision on Dose of antibiotic	From my previous experience	132	41.12
	By checking the package insert	105	32.71
	By guessing the dosage by myself	28	8.72
	By consulting family members/friends	25	7.78
	From the Internet	18	5.60
	Advertisement from the print media or TV	10	3.11
Change of antibiotic during self medication	Yes	82	25.55
	Sometimes	48	14.95
	No	192	59.81
Reasons for change	The former antibiotics did not work	97	30.22
	To reduce adverse reactions	47	14.64
	The former antibiotics ran out	42	13.08
	The latter one was cheaper	15	4.67
When antibiotic stopped	After a few days regardless of the outcome	12	3.74
	After symptoms disappeared	66	20.56
	A few days after the recovery	89	27.73
	After antibiotics ran out	12	3.74
	At the completion of the course	146	45.48

Table 3: Awareness Regarding Practices Related with Self Medication

Awareness regarding Practices Related With Self Medication	Frequency	Percent
Consultation of doctor in case of no improvement		
Not answered	230	71.65
Will consult Doctor	91	28.35
Practice after experiencing side effects		
Will stop using antibiotics	70	21.81
Switch over to another antibiotic	12	3.74
Will consult pharmacy staff	28	8.72
Will consulted a doctor	190	59.19
Will consult family members/friends	8	2.49

Table 4: Association of Socio-demographic Factors and Self Medication with Antibiotics for Children

Self medication with antibiotics for children				Significance
Age	**No Number (%)**	**Yes Number (%)**	**Total Number (%)**	
26-35 yrs	111 (78.7)	30 (21.3)	141 (100.0)	$\chi^2 = 9.53$
36-45 yrs	757 (77.2)	224 (22.8)	981 (100.0)	p = 0.023
46-55 yrs	201 (79.1)	53 (20.9)	254 (100.0)	
>56 yrs	17 (54.8)	14 (45.2)	31 (100.0)	
Sex				
Mothers	296 (67.0)	146 (33.0)	442 (100.0)	$\chi^2 = 38.20$
Fathers	790 (81.9)	175 (18.1)	965 (100.0)	p= 0.000
Family Type				
Nuclear	434 (61.3)	274 (38.7)	708 (100.0)	$\chi^2 = 204.23$
Joint	652 (93.3)	47 (6.7)	699 (100.0)	p= 0.000

Education				
Primary	7 (77.8)	2 (22.2)	9 (100.0)	χ^2 = 8.020
Secondary	302 (78.9)	81 (21.1)	383 (100.0)	
HS	212 (71.4)	85 (28.6)	297 (100.0)	p= 0.090
Graduation	474 (78.1)	133 (21.9)	607 (100.0)	
Postgraduation	91 (82.0)	20 (18.0)	111 (100.0)	
Occupation				
Unemployed	76 (82.6)	16 (17.4)	92 (100.0)	χ^2 = 3.01
Employed	532 (76.3)	165 (23.7)	697 (100.0)	
Self Employed	318 (76.1)	100 (23.9)	418 (100.0)	p= 0.388
Professional	160 (80.0)	40 (20.0)	200 (100.0)	
Total	1086 (77.2)	321 (22.8)	1407 (100.0)	

Table 5: Binary Logistic Regression of Socio-demographic Factors with Self Medication of Antibiotics in Children

Socio-demographic factors	**B**	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**	**95% C.I. for EXP(B)**	
							Lower	**Upper**
Sex (Mother)	0.57	0.15	15.34	1	**0.000**	1.77	1.33	2.35
Type of Family	-2.06	0.17	143.98	1	**0.000**	0.13	0.09	0.18
Age	0	0.01	0.001	1	0.98	1	0.98	1.03
Monthly income	0	0	0.28	1	0.59	1	1	1
Constant	1.28	0.60	4.55	1	0.03	3.6		

Discussion:

In this cross sectional study, results showed that the self medication with antibiotic to the children among the parents of school going children was 22.81%. This percentage is much less than other studies [5, 7, 8]. A review article on Concept of Self Medication had reported the prevalence of self medication for infants in Nigeria as 47.6% [2]. Even though the prevalence in this present study is less in comparison to other countries, absolute number will be quiet high considering the population size of country.

The most common symptoms for which antibiotic was used as a self medication were suggestive of ARI, like runny nose, cough, sore throat. Similar findings are noted in studies conducted in Baghdad city and Sana'a City, Yemen [4, 8]. Diarrhoea was another reason for non prescribed use of antibiotic & similar findings are noted by other studies also [4, 8, 9]. In one of the study conducted in Lagos, Nigeria about self-medication for infants with colic found that parents have used antibiotic for treating colic [10]. Unindicted use of antibiotics was found in majority cases where symptoms were suggestive of viral infections.

Most common method for choosing the antibiotic was parents own experience or previous prescription given by doctor for similar ailments. Antibiotics were purchased from nearby pharmacies or used from leftover antibiotics of previous illness. More than half of the parents have not answered for the reasons for non prescriptional use of antibiotic. Most common reasons given by the parents were convenience and lack of time to consult the doctor. Similar findings are mentioned by other studies [4, 8].

Dose of antibiotic use was decided by majority parents on the basis of their previous experience or with the help of package insert. It indicates that most of the parents were aware of the dose and duration. Nearly 40% of parents have changed antibiotic on their own when they felt it is not working. Other reasons for the change in antibiotic were: exhaustion of previous antibiotic store or adverse drug reaction. These practices are worrisome. The practice of self medication with antibiotics for children in parents of primary and secondary school going children is significantly associated with age, sex and family type. Practice was significantly more common in the age group of 36-45 years, in mothers and in nuclear family. In nuclear family, parents are solely responsible and they have to take care of children without any assistance. Working mothers could be finding difficult to consult doctors due to time constraints resulting into self medication.

Kotwani and Holloway had studied trends in antibiotic use among outpatients in New Delhi and found that antibiotics are overused, misused for self limiting viral infections and underused due to financial concerns [11]. A major problem of self medication with antibiotic is the emergence of resistance in human pathogens and needs some remedial measures and when it happens with children, risk to the life is very high.

Conclusion:

The parental use of non prescribed antibiotic was high. Parental use of self medication was significantly high in nuclear families and by mothers.

References

1. Kiyingi KS, Lauwo JAK. Drugs in the home: Danger and waste. *World Health Forum* 2016; 14:381-4.
2. Jain S, Malvi R, Purviya J. Concept of self medication: A Review. *Indian J Pharm Biol Arch* 2016; 2(3): 831-36.
3. National Policy for Containment of Antimicrobial Resistance, India 2011 http://www.ncdc.gov.in/ab_policy.pdf (last accessed on 2/1/2018)
4. Jasim A. Parental self medication of antibiotics for children in Baghdad city. *Int J Pharm Pharm Sci* 2014; 6(10): 485-89.
5. Togoobaatar G, Ikeda N, Ali M, Sonomjamts M, Dashdemberel S, Mori R, *et al*. Survey of non-prescribed use of antibiotics for children in an urban community in Mongolia. *Bull World Health Organ* 2010; 88(12): 930-36.
6. Parimi N , Pereira L.M.P., Prabhakar P. Caregivers' practices, knowledge and beliefs of antibiotics in paediatric upper respiratory tract infections in Trinidad and Tobago: a cross-sectional study. *BMC Family Practice* 2004; 5:28.
7. Larsson M, Kronvall G, Chuc N, Karlsson I, Lager F, Hanh H *et al*. Antibiotic medication and bacterial resistance to antibiotics: a survey of children in a Vietnamese community. *Trop Med Int Health* 2000; 5(10):711-21.
8. Mohanna M. Self-medication with Antibiotic in Children in Sana'a City, Yemen. *Oman Med J* 2010; 25(1).
9. Qazi F, Bano N, Shoaib M, Yousuf R. Self-Medication of antibiotics in pharyngitis and gastroenteritis - a community based study in Karachi, Pakistan. *Int J Pharm Sci Rev Res* 2013; 21(2):207-11.
10. Oshikoya K, Senbanjo I, Njokanma O. Self-medication for infants with colic in Lagos, Nigeria. *BMC Pediatrics* 2009; 9(1).
11. Kotwani A, Holloway K. Trends in antibiotic use among outpatients in New Delhi, India. *BMC Infect Dis* 2011; 11(1).

[*]***Author for Correspondence:*** *Dr. Mrs. Kadam Yugantara Ramesh, Department of Community Medicine, Bharati Vidyapeeth Deemed University Medical College & Hospital, Sangli, Maharashtra*
Email: yugakadam2011@rediffmail.com Cell: 09890941745