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Research Article

**KNOWLEDGE, ATTITUDES AND PRACTICES OF PARENTS
IN RESPECT OF ANTIBIOTIC USE IN CHILDREN**

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Abstract:

Background: Increasing resistance to antibiotic chemotherapy is becoming a great challenge for medicine in recent times. Un-prescribed intake of antibiotics is a major promoter to expansion of this problem. In Pakistan access to antimicrobials remains unsupervised and hence resulting in over use. The aim of this study is to determine knowledge of parents regarding use of antimicrobial therapy, problems associated with it, their source of information and their expectations from the Pediatricians for antibiotic prescriptions.

Methods: This is a questionnaire based cross sectional study conducted at Nishtar Hospital Multan & Lahore General Hospital Lahore. Parents who consented, has children aged between 0 to 12 years, and were not directly related to medical profession were included in this study. Total number of participants interviewed were 618. Study was done in the period of 06 months from November 2018 to May 2019. Analysis was done using SPSS v23.

Results: Most of the respondents were mothers. Majority of participants were having education up till level of Matriculation. 448 (72.49 %) responded that they enjoy a good access to healthcare. Commonest source for use of antibiotics was Doctors. 238 (38.51%) mentioned that antibiotics must be administered in any case of fever, 347 (56.1%) thought that antibiotics use to speed up recovery and 486 (78.6%) knew that antimicrobials have their own after effect. The commonest reason to administer an un-prescribed antimicrobial agent was that the same antibiotic was being prescribed by a physician earlier followed by a pharmacist or by a family member recommending use of antibiotic. Majority of the respondents denied Lack of resources as a reason for self-administration of antibiotics.

Conclusion: There is a need to increase awareness regarding sensible use of antibiotics and to keep a close check on un-prescribed dispensing of antibiotics.

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INTRODUCTION:

With the discovery of penicillin heralded the era of antimicrobial agent. They proved to be extremely useful in the treatment of infectious diseases but soon clinical failures started because of emergence of antibiotic resistance.^{1,2} This constrain the development of new classes of antimicrobial agents. The combat between the antibiotics and bacteria started and it showed a familiar trend with the introduction of all the new class of antibiotics. After an initial insult, the bacteria used evolutionary process and natural selection to envelope different modes of resistance and thus emerge victorious. The excessive use of antibiotic agent has led to spread of resistant strains of bacteria. This progression continues persistently and has reached to an alarming amplitude with the evolution of the ‘super-bugs’ having New Delhi metallo- β -lactamase-1 (NDM-1) gene. This progression of resistance has been appropriately described by A. Ghafur that the art of fighting a war is deception; that is deceiving the enemy. In contrast in the war against microbial organisms we have deceived ourselves by abusing, under using and excessive using antibiotics.³ There is ample amount of evidence to conclude that antibiotic overuse is closely correlated with increasing bacterial resistance.⁴ For example, it has been demonstrated that recent antibiotic medication use enhanced the risk of nasopharyngeal colonization of penicillin-resistant pneumococcus.^{5,6} The in-apropos utilization of antibiotics has been well-reported in both developed and underdeveloped countries.⁷ The comparatively less regulation and weak execution of health policies in the underdevelopment countries has led to persistence of such practices thus enhancing bacterial resistance.⁸ A recent example from the Indian subcontinent is the discovery of NDM-1 gene plasmids causing resistance to gram-negative bacteria and its capability to be an overall general health problem.⁹

The article by A. Ghafur attracts our attention to the boundless nonprescription use of antibiotic agent in India, and proposed that the NDM-1 problem is likely to further aggravate in the future.^{3,9} In the under developed countries acute respiratory infections (ARI) are leading cause of childhood mortality. As in Pakistan, ARI in children under-five years of age, are responsible for approximately more than one-quarter of mortalities in the community and one-third of expiries occurring in hospitals.¹⁰ Along with other factors that are contributing to complications and deaths due to ARI, the insensible use of antibiotics for treatment of ARI has also been involved. An article written by Thaver *et. al.* of studies from

developing world shows disturbing rates of resistance to antibiotics like ampicillin and gentamicin, the first-line antibiotic agents recommended by WHO for treatment of critical community-acquired infections (like sepsis, pneumonia, and meningitis) in young children. Cotrimoxazole (TMP-SMX) is prescribed extensively in pneumonia control programs in underdevelopment world.¹¹

Widespread resistance to TMP-SMX is now prevailing in community isolates of *E.coli* (78%) and *Klebsiella* (45%).¹¹ In the developing countries, resistance to antibiotic drugs is causing increase in mortality and morbidity from infectious illnesses like pneumococcal meningitis, TB and typhoid fever.⁸ Antibiotic resistance also expose to a heavy toll on the health economy.⁴ In a pediatric set up, illness due to upper respiratory infections are one of the major cause for advising antibiotics while, most of these infections are not bacterial but viral in nature and only less than 5% are complicated by bacterial infections. Viral infections do not require antibiotics. Therefore the sensible use of antibiotics needs to be stressed. In this respect the better and continuous education of physicians is compulsory. Doctors need to be aware of the serious consequences of indiscriminately advising antibiotics. Contrarily public also needs to be educated on this grim matter. A number of articles have been written to investigate the antibiotics prescribing practices of physicians.^{2,10,12–14}

Some of the reasons for unsuitable use of antibiotics identified are social reasons.¹ Commonly implicated is the fear of losing clientage and unable to meet the expectations of parents of the patients. Parents often request by themselves an antibiotic treatment where none is required or request a different antibiotic than the one doctor was going to prescribe and sometimes physicians tend to accept their request.^{12,14–16} Parents also occasionally administer antimicrobial therapy to their children without the knowledge of their pediatrician. Parents have misconceptions in respect of the role of antibiotics and which diseases need antibiotic therapy. They also need to be aware and educated about the aftereffects of these medicines. Different previous studies have focused more on the antibiotics prescribing practices of physicians. The beliefs, implementation and knowledge of parents regarding antibiotic medicines are also an important zone that needs to be thoroughly evaluated. In order to deal with the menace of drug-resistance, apart from refreshing doctor’s knowledge, public awareness is crucial. By conducting this study on the knowledge, attributes

and practices of patient's parents, pertinent points can be analyzed so that the education of parents can be achieved in a targeted manner. This may help to improve the parents' attitudes towards antibiotic drugs use and play a vital role in curbing the misuse of antibiotics.

MATERIAL AND METHODS:

This study was conducted at Nishtar Hospital Multan & Lahore General Hospital Lahore. The respondents were parents who consented and has children in Pediatric age group, i.e., (from birth to 12 years of age). Those parents who were somehow related to medical profession were excluded from study. This is a questionnaire based cross sectional study. A total of 618 parents were interviewed. Study respondents meeting the selection criteria were nominated by convenient sampling. SPSS v23 was used for analysis of data. An informed consent was acquired from each participant prior to administering questionnaire. The subjects had the right not to answer any part of the questionnaire they did not want to. This study posed no risks to participants.

RESULTS:

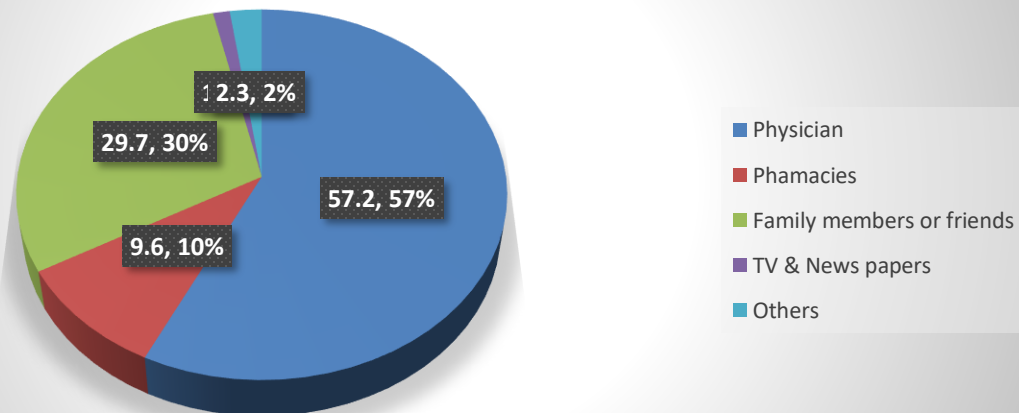
Total number of participants interviewed were 618 which comprised of 380 (61.4%) mothers and 238 (38.5%) fathers. The age distribution of participants comprised of 36 ± 14 years of age. Distribution of respondents according to literacy level was as; 264 (42.71%) up to matriculation, 163 (26.37%) up to Graduation, 67 (10.84%) up to Post-graduation while 124 (20.06%) reported to be illiterate. Majority (54.3%) reported their family income to be moderate. 448 (72.49 %) of respondents mentioned that they enjoyed easy and good access to healthcare settings while 94 (15.2%) reported a poor access to healthcare facilities. 584 (94.4%) of participants had

experienced their child suffered from Acute Respiratory Infection. Commonest sources for information about use of antibiotic therapy were Physician 354 (57.2%), followed in order by family members or friends 184 (29.7%) (Figure-1).

There was a little difference in the number of participants that disagreed with notion that Antibiotics should be administered in any case of fever 238 (38.5%) as compared to those who were agreed to this statement 206 (33.3%) while 174 (28.1%) were uncertain. Similarly 184 (29.7%) mentioned that antibiotic agents were always necessary in acute respiratory tract infection and 272 (44.01%) were uncertain to this question. A vast majority 347 (56.1%) thought that Antibiotics enhance recovery time and 486 (78.6%) agreed that antibiotics have their own side effects.

Most of the parents 398 (64.4%) took their child to the doctor in less than 3 days after initialization of symptoms of ARI. Commonest symptoms to visit a pediatrician included cough 198 (32.04%), followed by ear pain 166 (26.8%) and nasal discharge 131 (21.1%). Majority of participants expect that the pediatrician should prescribe antibiotics for sore throat, coughing, fever and pain in ear. However symptoms for which parents of children do not expect their doctor to prescribe antibiotic therapy were cold 184 (29.7%) and nasal discharge 216 (34.9%)

The commonest reason to administer un-prescribed antibiotics was that for the same disease the same antibiotic was prescribed by physician earlier. Lack of resources was rejected by majority of parents as a reason for self-administration of antibiotics.

Fig. 01 : Source of information about antibiotics**DISCUSSION:**

Majority of participants had age group of having kids in Pediatric age group. As our study was mainly conducted in an urban settlement majority of participants had moderate family income and enjoyed better access to healthcare. This populace mainly reflected middle socioeconomic status and hence created a bias as results of our study cannot be generalized. However it pledge a good insight to the issue as this population due to its satisfactory literacy rate is the one most prone of self-administration of antibiotics.⁴

The fact that a good number of parents admitted to self-administration of antimicrobial drugs demonstrates a lack of knowledge regarding its consequences. Majority of parents took their child to pediatrician in less than 3 days of onset of initial symptoms. And by this time complications like super added infections or development of Otitis media are have not occurs usually and hence may lead to undue use of antibiotics.¹

Similarly there is lack of follow up by parents, prompting the physician to empirically start antibiotic therapy. As demonstrated in results majority of parents want their pediatrician to prescribe antibiotics as well.^{12,14-17}

Majority of parents accurately described cough and ear pain as conditions that require antibiotic agents as they may represent a developing pneumonia or Otitis media, both being serious illnesses that require antibiotics.

Most common reason described for self-administration of antibiotics were mentioned to be a

pediatrician previously prescribing same antibiotic so same antibiotic was advised by family member or pharmacy personnel.^{7,13} This fact points out to the problem of dispensing antibiotic drugs without prescriptions by pharmaceutical stores making antibiotics them accessible to everyone. This currently poses a major public health problem requiring considration of authorities to uphold guidelines in order to curb this practice.^{8,9}

CONCLUSION:

Large number of parents admitted that they self-administered antibiotics. There is a need of intervention to enhance awareness regarding sensible use of antibiotics and to check un-prescribed dispense of antibiotics.

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