A REVIEW ON PRESCRIPTION PATTERN OF ANTIBIOTICS USED IN LRTI IN PEDIATRIC POPULATION

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ABSTRACT
Lower respiratory tract infections are the second most cause of death in pediatric population. Pneumonia and Bronchiolitis are the main infections coming under LRTI. Antibiotics are the main class of drugs using in LRTI. This study aims to assess prescribing pattern of antibiotics used in LRTI in pediatric population. It is highly necessary for the clinical pharmacist to review and clinically check all prescriptions presented at the pediatric wards because increased use of antibiotics may cause emergence of resistance. Nowadays generic prescriptions are very less, dual and triple antibiotic therapies are very high.

KEYWORDS: Lower respiratory tract infections, Pediatrics, Antibiotics.

INTRODUCTION
Antibiotics are the substances that destroy or inhibit the growth of other microorganism and are used in the treatment of external or internal infections.[1] Antibiotics are among the most commonly prescribed drugs in pediatrics. Because of the overall rise in health care costs, lack of uniformity in drug prescribing and the emergence of antibiotic resistance, monitoring and control of antibiotic use are of growing concern and strict antibiotics policies should be warranted.[1]

The pediatric population comprises of 20-25% of the total world population, and numerous acute and chronic diseases an affect this sub population, premature neonate have poorly developed organ functions and are at highest risk of eliciting unexpected toxicity or poor
clinical response from suboptimal dosage regimen of drug usage. This alters the pharmacokinetics or dosage requirements in this population.\cite{2}

Lower respiratory tract infections are mainly two type, Pneumonia and Bronchiolitis. Pneumonia is an inflammation of parenchyma of the lungs caused by microorganisms. Pneumonia kills more children than any other illness. Approximately 2 millions children under the age of 5 in developing countries die each year pneumonia.\cite{3} Bronchiolitis is a commonly caused viral infection and is the predominant cause of acute wheezing in infants. It is characterized by acute inflammation, oedema, increased mucus production and bronchospasm.\cite{4}

Increased use of antibiotic in pediatric population can cause developing resistance towards microorganism.

Khaja, et al 2012 conducted a prospective study on ‘Prescribing pattern of antibiotic in pediatric patients with pneumonia’. In this study, out of 105 patients 62 were males and 43 females. The study of prescribing pattern is a component of medical audit, which seeks monitoring, evaluation and necessary modification in the prescribing practice of prescriber to achieve rational and cost effective medical care. Widely used antibiotics were Amoxicillin + clavulanic acid 43.8% followed by ceftriaxone(36.2%), cefotaxime(26%).\cite{3}

Deshmukh Swapnil Narayan, et al 2016, conducted a study on ‘prescription pattern of antibiotics in pediatric in patients. In this study antibiotic prescription pattern was not rational as there is poly pharmacy, overuse and inappropriate use of antibiotics without culture and sensitivity testing.\cite{5}

Kailash Thapaliya, et al 2015, conducted a study on ‘prescription pattern of antibiotics in pediatrics’. This study gives an overview of the pattern of antibiotic. Pneumonia was the most prevalent disease and was found to be primary cause for hospitalization among pediatric patients.\cite{6}

Hemamalini MB et al states that lower respiratory tract infections more in males than females. In this study 95.2% of prescriptions with antibiotics. Mono therapy 32.77%, dual therapy 39.4%, triple therapy 27.73%. main antibiotics used in this study was amoxicillin+ clavulanic acid(n-58), followed by Amikacin(n-57) and ceftriaxone (n-53).
Majority of the drugs were given by IV route. Doctors should be educated on more appropriate and cost effective prescribing.[7]

Laya Vahdati Rad, Modupalle Alekhya states that out of 109 patients enrolled in the study from inpatient pediatric department, majority of patients 55% belonged to age group of 0-5 years. Out of 155 anti microbial agent prescribed, cephalosporin were 58.06%, penicillins 19.35% and aminoglycoside antibiotics 16.12%. more preferred dosage forms was injectables, but it can increase the cost of the therapy and need of rational drug use practices like prescribing by generics and drugs under essential drug list.[1]

Khaled et al states that 59% of patients received one antibiotic, two antibiotics 37.5%,three antibiotics 2.7%. widely prescribed antibiotics was cephalosporins 52%, followed by aminoglycosides {17.3%}, pencillins 12.5%, macrolide 8.3% other 9%. Prescription pattern and usage of antibiotics in this study was inappropriate because though it is acceptable to prescribe broad-spectrum antibiotics if a doctor thinks the clinical scenario warrants it.[8]

A study on prescription pattern of antibiotic in pediatric population conducted in REMS college of pharmacy Karnataka and NET pharmacy college Karnataka, said that widely prescribed drugs are Cephalosporins, amino glycosides, penicillins and macrolide antibiotics. The total number of drugs and the number of antibiotics prescribed were found to be rational.[11]

A study conducted on prescription pattern of antibiotics in pediatric hospital of Kathmandu valley. In these study, male patients was more than the number of female patients. Cephalosporins were the top most used class of antibiotics in this study followed by penicillin. The numbers of antibiotic prescribed were found to be rational.[9]

A study on, prescription pattern of antibiotic in pediatric population conducted at two private sector hospitals in Ujjain India. In this study broad spectrum antibiotics were commonly prescribed in both hospitals. Prescription of antibiotics not according to any guideline.[10]

A study conducted on, prescribing pattern of antibiotics in pediatric department of Shivamogga institute of medical sciences, Karnataka. In these study, male patients was more than the number of female patients and also antibiotic prescription pattern was not rational as there was poly pharmacy, less use of generic drugs, overuse and inappropriate use of antibiotics, excessive parenteral use of antibiotics administration.[18,19]
A study conducted on the department of pediatrics in a tertiary care hospital of north India. In these study, male patients was more than the number of female patients. Widely used antibiotic was amoxicillin and also high percentage of antibiotic were used in children so antibiotic prescription pattern was not rational.\[20\]

A study conducted on the department of pediatrics in a tertiary care hospital Ethiopia. In these study, Cephalosporins was commonly prescribed and it also shows poly pharmacy. Generally there was good generic prescription as well as outstanding antibiotic prescription from EDL of Ethiopia.\[21\]

A study conducted on the department of pediatrics in a teaching hospital Jaffna. In this study male patients were found to be more than as compared to female patients. Most commonly used antibiotic was amoxicillin (48%), erythromycin(20%), cephalaxin(16%). This study reveals the inappropriate usage of antibiotics and parental knowledge on antibiotic was inadequate.\[23\]

A study conducted on the department of pediatrics in a teaching hospital Karnataka. In this study male patients were found to be more than as compared to female patients. 67% patients received one antibiotic, 9% patients received two antibiotics, 18% patients received three antibiotics, 9% patients received four antibiotics. This study reveals the increased use of antibiotics in pediatric population.\[25\]

A study conducted on prescribing and dispensing pattern in pediatrics outpatient clinic of a rural tertiary care teaching hospital. In this study female patients found to be more than as compared to male patients. It also highlights the problem of overprescribing of antibiotics, and a trend of poly pharmacy.\[27\]

A study on prescribing pattern of drugs conducted at child care centre in Moradabad city. In this study male patients found to be more as compared to female patient. Mainly prescribed antibiotic for LRTI was Cephalosporins followed by gentamicin and amoxicillin. This study also shows irrational use of antibiotics.\[28\]

A study on usage of antibiotics conducted at Jawaharlal Nehru medical college wardha. Number of male patients was more as compared to female patients. Penicillin derivates were most frequently prescribed antibiotics followed by cephalosporins and then aminoglycoside. Similar to previous study this also shows irrational prescriptions.\[29\]
A retrospective study on prescription pattern of antibiotic conducted at university referral hospital Ethiopia. Male patients were more as compared to female patients. Most frequently prescribed antibiotic was penicillin G crystalline followed by ceftriaxone, cloxacillin, ampicillin, gentamicin etc. It shows the rational use of antibiotics.[30]

CONCLUSION
These studies give an overview of pattern of antibiotics used for LRTI in pediatric department. From above studies, LRTI more in males than females. Uses of cephalosporin were high in all studies. Pneumonia is the main killer disease in pediatric population and also irrational use of antibiotics was common. Generic prescriptions are less, which means cost effective prescriptions were reduced. Physicians not followed any guidelines to prescribe antibiotics. These all are causing emergence of resistance.

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REFFERENCE


