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Research Article

**FIGHTING THE INFECTIONS OF THROAT THROUGH
ANTIBIOTICS: A COMPARATIVE RESEARCH STUDY WITH
NON-JUDICIOUS PRESCRIPTION OF ANTIBIOTICS**¹Dr Fatima Ameer, ²Dr Iqra Waris, ³Dr Aqsa Shakir¹Holy Family Hospital Rawalpindi, ²WMO, BHU Mansoorwali, Wazirabad, ³Holy Family Hospital Rawalpindi.**Abstract:**

Objective: We aimed to identify the need and significance of necessary use of antibiotics that whether they are to be used for the management of throat infections or otherwise.

Method: We conducted this prospective research study at Mayo Hospital Lahore in the timeframe of January to November 2018. We cultured and identified a total of 362 patients for isolates from almost every age group who were diagnosed with ITRs. The researcher used Kirby-Baur method for the confirmation of isolates susceptibility to antibiotics in the setting of the laboratory. We collected the questionnaires about the otorhinolaryngologic antitrust susceptibility about their prescriptions of the drugs.

Results: In the total isolates (362) the frequent presentation was of Pneumococci, Klebsiella pneumoniae and Staphylococcus Aureus with respective proportions of 35.34%, 14.5% and 23.01%. The otolaryngologists twenty prescribed antibiotics such as Cefotaxime, Amoxicillin, Ceftriaxone and Pharyngitis. We reported the susceptibility of isolates for Ceftriaxone, Cefotaxime, Penicillin and Amoxiclav with respective proportions of 91.0%, 91.2%, 71.0% and 80.4%. Among the less effective antibiotics were Cefixime and Erythromycin with respective proportions of 30.7% and 43.1%.

Conclusion: More frequent isolation was reported in Pneumococcal and Staphylococci among the patients of throat infection. Both had an association with GIT resident flora along with infected respiration which required probably harmful pharmacological management.

Keywords: Pharyngitis, Tonsillitis, Isolation, Throat Infection and Antibiotic.

Corresponding author:**Dr. Fatima Ameer**

Holy Family Hospital, Rawalpindi.

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INTRODUCTION:

An increase in the global antimicrobial is a serious healthcare issue which causes a common onset of RTI (Respiratory Tract Infection) [1 – 2]. Repetitive respiratory infections are among common global infections that occur because of viral pathogen attributing in the antibiotic's lines; whereas, there is no enhanced bacterial resistance activity in the prescriptions. The question is that why is the antibiotic prescription is first line choice of the physicians to treat even common infections. *Streptococcus pneumoniae*, *Hemophilus influenza* and *Moraxella catarrhalis* are resistant against antibiotics including penicillin, *S. pneumoniae* and macrolides which are important respiratory tract infection bacterial pathogens [3 – 5]. Commonly prescribed antibiotics are fluoroquinolones and Cotrimoxazole which are also resistant to cotrimoxazole, penicillin and ampicillin with respective proportions of 84%, 25% and 52% [6]. A resistant in the past years has also promoted the use of antibiotics. Antibiotics are commonly prescribed to patients of diarrhoea and throat pain (90%) [7]. Pharmacists issue antibiotics with a huge proportion of 77.6% without any prescription. Research studies also describe different outcomes of the antibiotics with respect to time of management and geographical location [8]. In the light of forgoing, it is important to have a sound knowledge about the sensitivity pattern of antibiotics. Therefore, we aimed to identify the need and significance of the necessary use of antibiotics that whether they are to be used for the management of throat infections or otherwise.

MATERIALS AND METHODS:

We conducted this prospective research study at Mayo Hospital Lahore in the timeframe of January to November 2017. We cultured and identified a total of 362 patients for isolates from almost every age group who were diagnosed with ITRs. The researcher used Kirby-Baur method for the confirmation of isolates susceptibility to antibiotics in the setting of the laboratory. We collected the questionnaires about the otorhinolaryngologic antitrust susceptibility about their prescriptions of the drugs. We took surveys

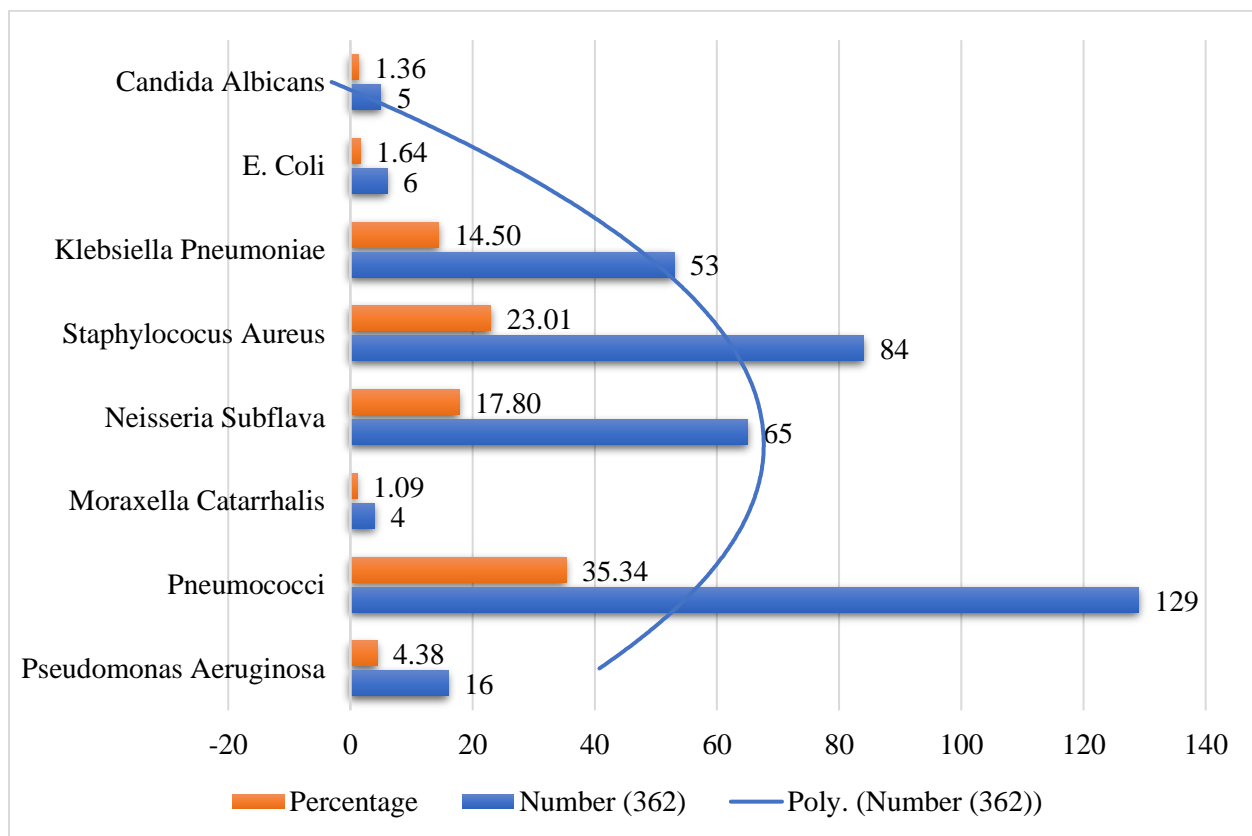
about the throat and the patient's susceptibility about the antibiotic among the patients of almost every age group at the hospital. Every patient also gave one pharyngeal swab and total swabs were 362; which were subsequently assessed for twenty-three antibiotic drugs. Patients frequently complained about nasal discharge and sore throat. We did not include those patients who were already taking antibiotic drugs from the last four weeks. We cultured sample colonies on various agar for diffusion method of Kirby-Bauer. Different agar was such as methylene blue eosin agar, blood agar and chocolate agar. Standard microbial assessments and biochemical tests were also performed for bacterial isolation assessment through Mueller-Hinton agar on Amoxicillin, amoxicillin, imipenem, cefotaxime and amikacin with respective values of 10 mg, 20 mg, 10 mg, 30 mg and 30 mg on various drug load of antibiotic discs including ceftriaxone, ceftazidime, Fosfomycin, clindamycin, enoxacin, ofloxacin, doxycycline, ciprofloxacin, oxacillin cefuroxime, tobramycin, gentamicin, erythromycin and penicillin with respective values of 30 mg, 30 mg, 200 µg, 2 µg, 10 µg, 5 µg, 30 mg, 5 g, 30 g, 10 g, 10 g and 15 g. Resistance and sensitivity was also determined through incubation for twenty-four hours at 35° C.

RESULTS:

In the total isolates (362) the frequent presentation was of Pneumococci, *Klebsiella pneumoniae* and *Staphylococcus Aureus* with respective proportions of 35.34%, 14.5% and 23.01%. The otolaryngologists twenty prescribed antibiotics such as Cefotaxime, Amoxicillin, Ceftriaxone and Pharyngitis. We reported the susceptibility of isolates for Ceftriaxone, Cefotaxime, Penicillin and Amoxiclav with respective proportions of 91.0%, 91.2%, 71.0% and 80.4%. Among the less effective antibiotics were Cefixime and Erythromycin with respective proportions of 30.7% and 43.1%. Detailed outcomes about age-wise stratification, antibiotic sensitivity pattern and isolates susceptibility are given in Table – I, II and II.

Table – I: Isolates Frequency

Isolates	Number (362)	Percentage
Pseudomonas aeruginosa	16	4.38%
Pneumococci	129	35.34%
Moraxella Catarrhalis	4	1.09%
Neisseria Sub Flava	65	17.80%
Staphylococcus Aureus	84	23.01%
Klebsiella pneumoniae	53	14.50%
E. Coli	6	1.64%
Candida Albicans	5	1.36%

**Table – II:** Age Wise Distribution of Various Isolates

Age Group	1 - 20 Years		20 - 40 Years		Above 40 Years	
	Number	Percentage	Number	Percentage	Number	Percentage
Total Isolates	135		127		78	
S. Aureus	43	31.80	25	19.60	10	12.80
K. Pneumoniae	14	10.30	11	8.60	1	1.20
P. Aeruginosa	4	2.90	6	4.70	3	3.80
E. Coli	3	2.20	2	1.50	1	1.20

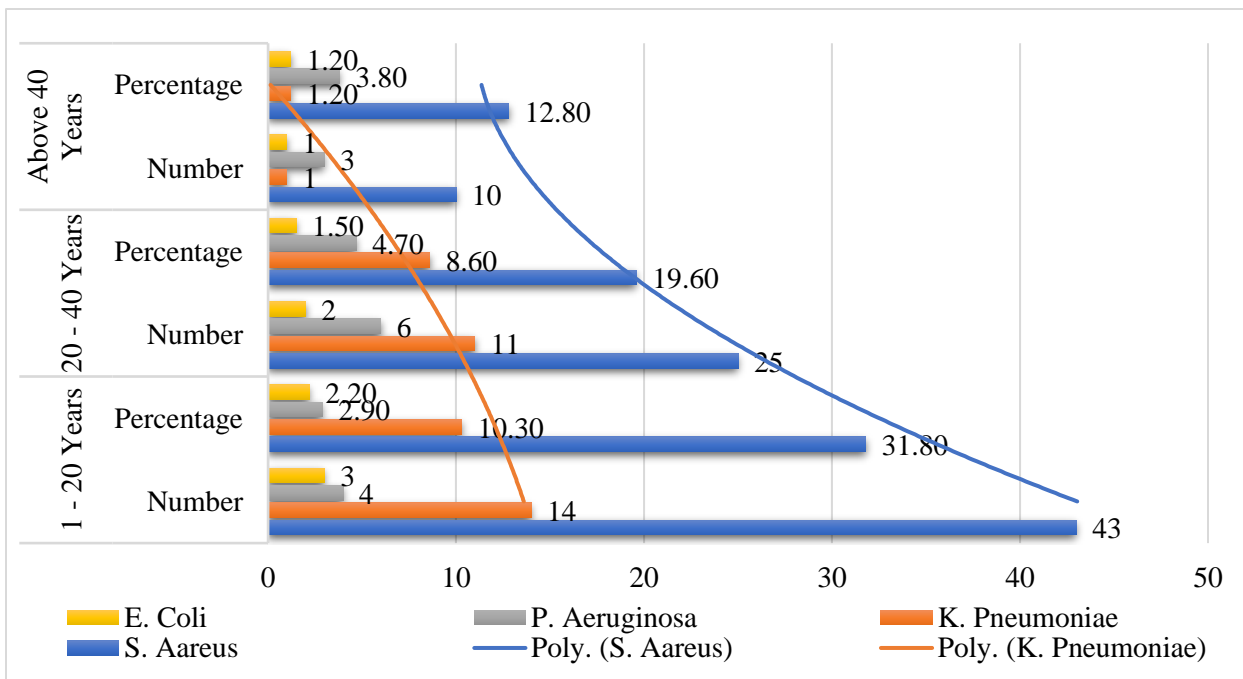
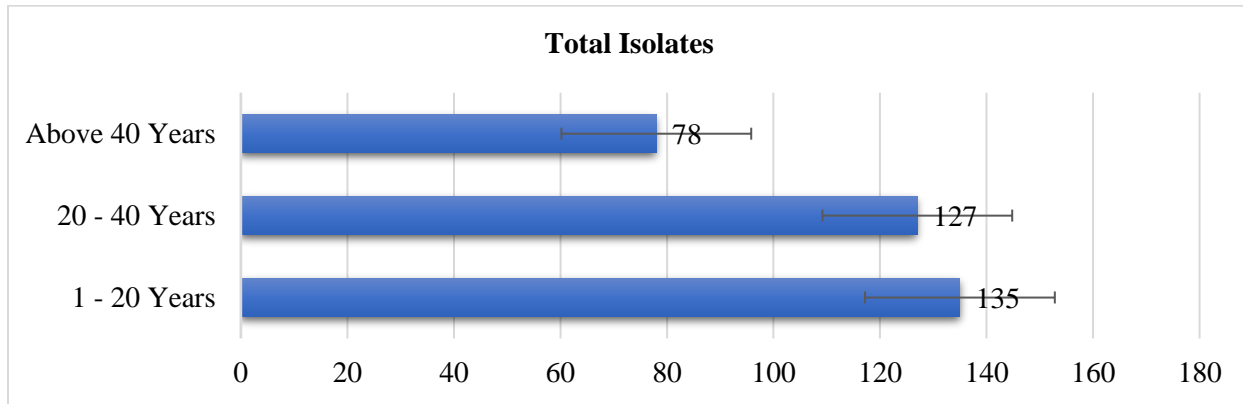
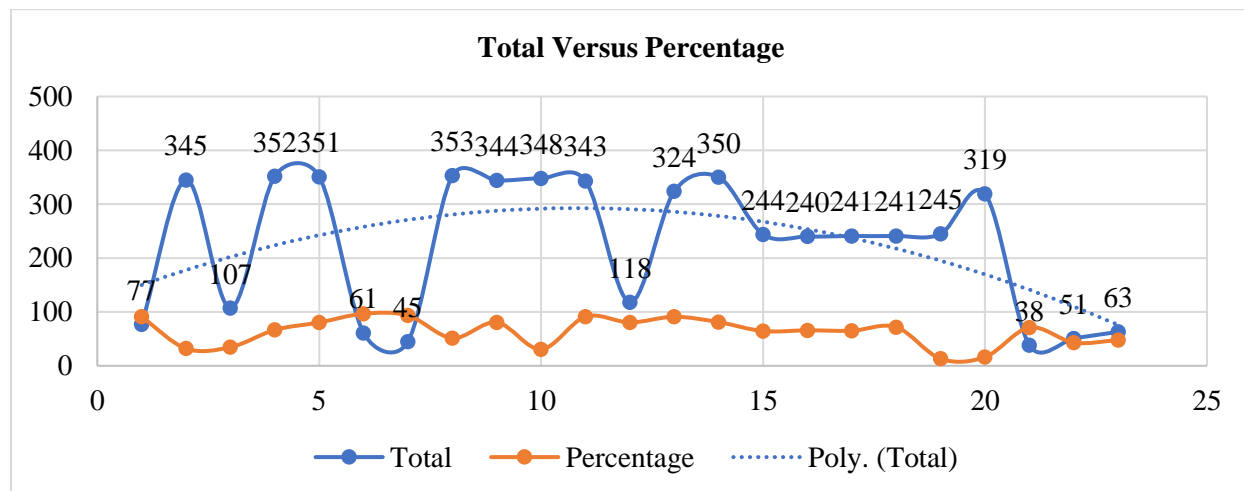
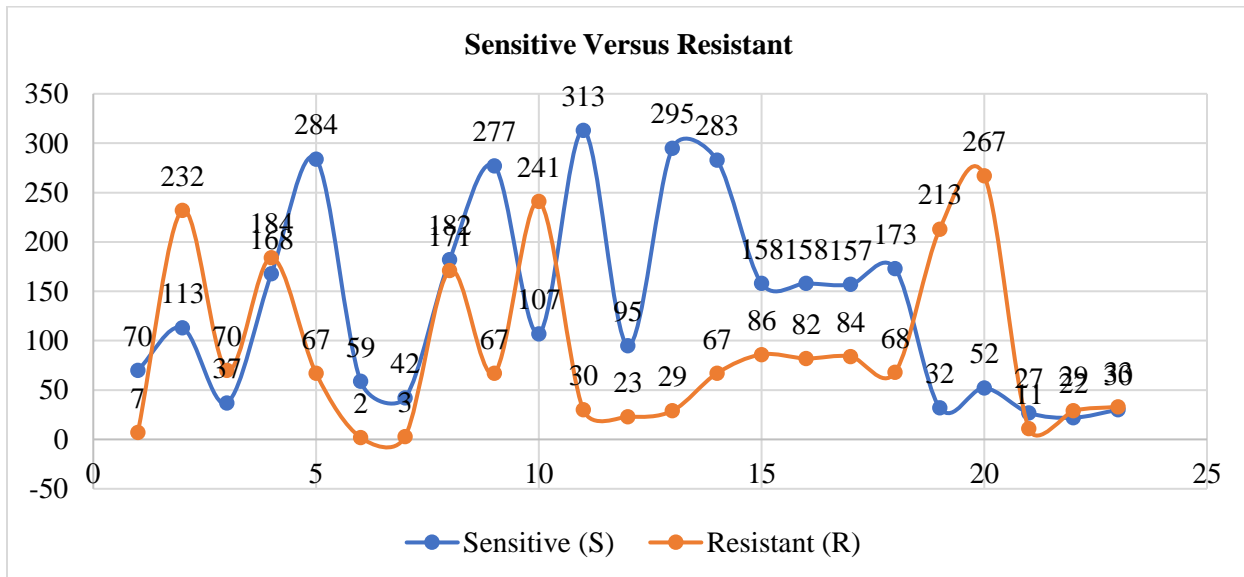


Table – III: Antibiotics Sensitivity Patterns

Antibiotic	Sensitive (S)	Resistant (R)	Total	Percentage
Amikacin (AK)	70	7	77	90.9
Gentamicin (CN)	113	232	345	32.07
Tobramycin (NN)	37	70	107	34.57
Amoxicillin (AML)	168	184	352	66.66
Amoxic (Augmentin) (AMC)	284	67	351	80.45
Imipenem (IPM)	59	2	61	96.72
Piperacillin + Tazobactam (TZP)	42	3	45	93.33
Cephadrine (Velocef) (V)	182	171	353	51.55
Cefuroxime (CXM)	277	67	344	80.52

Cefixime (CFM)	107	241	348	30.74
Cefotaxime (CTX)	313	30	343	91.25
Ceftazidime (CAZ)	95	23	118	80.5
Ciftriaxone (CRO)	295	29	324	91.04
Fosfomycin (FOS)	283	67	350	81.08
Ofloxacin (OFL)	158	86	244	64.48
Enoxacin (ENX)	158	82	240	65.83
Ciprofloxacin (CIP)	157	84	241	65.14
Sparfloxacin (SPX)	173	68	241	71.78
Doxycycline (DOX)	32	213	245	13.06
Septran (SXT)	52	267	319	16.3
Penicillin (P)	27	11	38	71.04
Erythromycin (ER)	22	29	51	43.13
Lincomycin (LN)	30	33	63	47.61



DISCUSSION:

The research focused on the prevalence of the bacterial pathogen that contributes to the antibiotics to susceptibility patterns and URCs. The main cause is ITR instead of *S. pyogenes*, *H. influenza*. Another research proposed a low isolation rate of eight percent for Streptococci and URC causing infection with respective proportions of 23.01% for *K. pneumoniae* and 14.5% for *S. aureus* [8]. Prevalence is consistent with reference to past studies. Our research shows a higher isolation for *K. pneumoniae* and *S. Aureus* with respective proportions of 10.3% and 31.8% in the young patients (20 Years) than an adult age bracket of (20 – 40) years [9].

There is an increased vulnerability of the young age group for URTIs which leads to poor sleep, malnutrition and humid climate causing bacterial infections. A research proposed *Neisseria* and *Pneumococci* among most frequent throat infection isolates with respective proportions of 17.80% and 35.34% [10]. Antibiotics pose damage to the patients with an increasing antibiotic resistance. It is suggested that only high-risk patients should be prescribed with antibiotics especially the patients presenting bacterial infections. Major severe infection isolated microbial pathogen includes *S. pneumoniae*, *Staphylococcus aureus*, *K. pneumoniae*, *H. influenzae* and *S. pyogenes* which are secondary to virus of influenza [11]. In the outcomes of another research healthy children showed a proportion of 2.2% of streptococci (GAS) [12]. Widespread use of the antibiotic is facilitating its resistance as well with an increased price. The use of Cefotaxime, Ceftriaxone and Amikacin are respectively as 91.25%, 91.04% and 90.9%. A reduced effectiveness has been reported about the Penicillin, Augmentin and Amoxicillin with respective proportions of 71.04%, 80.45% and 66.66%. Another author reported the infection of isolates with erythromycin-resistant strains (95%). Our research shows that there is an emergent need for the criteria of prescribing antibiotics to the patients.

CONCLUSION:

More frequent isolation was reported in Pneumococcal and Staphylococci among the patients of throat infection. Both had an association with GIT resident flora along with infected respiration which required probably harmful pharmacological management.

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