WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
Coden USA: WJPRAP Impact Factor 8.453
Volume 14, Issue 24, 730-741. Research Article ISSN 2277–7105

# IMPACT OF PARENTAL EDUCATION BY CLINICAL PHARMACIST ON ANTIBIOTIC USE IN PAEDIATRIC POPULATION

**M. Naufia*, Mouna Sri Ambati, Vennela Vasala, Shravya Bathini, Shifa Firdous**

Sree Chaitanya Institute of Pharmaceutical Sciences, Thimmapur. Karimnagar.

Article Received on 15 Nov. 2025,
Article Revised on 05 Dec. 2025,
Article Published on 16 Dec. 2025,

https://doi.org/10.5281/zenodo.17950413

***Corresponding Author**

**M. Naufia**

Sree Chaitanya Institute of Pharmaceutical Sciences, Thimmapur. Karimnagar.

**How to cite this Article:** M. Naufia*, Mouna Sri Ambati, Vennela Vasala, Shravya Bathini, Shifa Firdous (2025). Impact Of Parental Education By Clinical Pharmacist On Antibiotic Use In Paediatric Population. World Journal of Pharmaceutical Research, 14(24), 730–741.


## ABSTRACT

The most widely sold medications in underdeveloped nations right now are antibiotics, which had led to an increase in antibiotic resistance. Mothers are essential in giving their children antibiotics because they are far too frequently afflicted with illnesses. The purpose of our study to ascertain the parents level antibiotic knowledge and how they support the prudent use of antibiotics. This was a prospective observational study conducted among 150 patients in pediatric department in District Government Hospital-Karimnagar. A questionnaire was designed and administrated to determine parents' knowledge, attitude and practice regarding antibiotic use in children. We also conducted pre and post-tests to evaluate the improvement in knowledge of parents regarding antibiotics in pediatric population. The data was statistically analyzed by Wilcoxon matched-pairs signed rank test in GraphPad Prism Version 10.4. We compared the KAP results of pre counselling and post counselling, among 150 patients. During the pre-counselling, we found that patient representatives have knowledge of 60%, attitude of 55% and practice of 62% about antibiotic usage. After the counselling it was increased to knowledge 89%, attitude of 83% and practice of 89%. Clinical pharmacist counselling is an effective strategy to promote rational antibiotic use in the paediatric population by empowering parents with essential knowledge and fostering responsible practices. These findings highlight the critical role of clinical pharmacists in addressing the global challenge of antibiotic resistance.

**KEYWORDS:** Knowledge, Attitude and Practice (KAP), antibiotic resistance, rational use, clinical pharmacist.

## INTRODUCTION

### DEFINITION

"Antibiosis" literally means "against life," and this is where the term "antibiotics" originated Microorganisms produce antibiotics, which selectively hinder the development of other germs or kill them at extremely low quantities. While some antibiotics just inhibit bacteria from growing, others can kill them entirely. Millions of people have been spared from diseases that would have been lethal in the past because to antibiotics. Antibiotics not only treated infections but also enabled a number of contemporary medical procedures, such as open-heart surgery, organ transplantation, and cancer treatment. However, misusing these beneficial compounds has led in a rapid rise in antibiotic resistance. It is important note that chemotherapeutic medications that target bacteria and are made from living things are referred to as antibiotics, whilst laboratory-produced synthetic medications are known as antimicrobials.

### RATIONAL USE OF ANTIBIOTICS

The rational use of medicines is important to recognise the health and well-being of all for a long time by the WHO. Antibiotics are commonly used to treat a variety of infections and illnesses in infants and young children. Given the physiological, psychological, and developmental differences between children and adults, using drugs in paediatrics require for specialised knowledge and expertise. These antibiotics can only be purchased from a pharmacy in the majority of developed nations with the specific consent of the clinical director. Self-medication and the irrational use of antibiotics can result in ineffective therapy and the emergence of drug resistance, which has become a concerning problem in recent years. The WHO has created a number of guidelines to help with rational prescribing. In 2019, the World Health Organisation created its seventh essential medications for children (EMLc). Specific guidelines for antibiotic selection are provided by the EMLc, which is separated into three groups. The first category, known as Access, has active agonists for several prevalent infections. In addition, they are less likely to cause resistance than other antibiotics. It is advised to use them as first- or second-choice empirical antibiotics. The second group (watch) is advised for a small number of specific infections and has a higher possibility for resistance. One of the main goals of stewardship projects is to monitor their

utilisation. The third category, (reserve), to be kept for the treatment of infections caused by multidrug-resistant organisms that are either confirmed or suspected. National and international stewardship programmes must keep an eye on their utilisation. One of the biggest worldwide concerns of the twenty-first century has been identified as antibiotic resistance. 'Antibiotic' is used throughout to refer to a substance that has activity against microorganisms. A microorganism develops resistance to an antibiotic when it can grow or survive in the presence of an antibiotic concentration that is typically enough to inhibit or kill organisms of the same species. The World Health Organisation has convened meetings, including an assembly on antibiotic resistance in 1998. One of prominent action is antibiotic resistance (React), an independent international organisation supported by the Swedish International Development Cooperation Agency, is one of the most well-known initiatives on antibiotic resistance. A plan for addressing antibiotic resistance was outlined at the first meeting. It was successful in raising awareness of the necessity of appropriate antibiotic policies in India among the top authorities and policymakers.

**KNOWLEDGE, ATTITUDE AND PRACTICE**

It is a knowledge, attitude, and practice survey used in research studies to better understand health-related behaviour. Both quantitative and qualitative data are accessible through it. According to KAP surveys, there are a number of misconceptions that could be impeding our desired behaviours and possibly preventing behaviour change. Knowledge signifies the ability to pursue and use information. Attitude is the result of reacting in specific ways in certain situations. Practice demonstrates how knowledge and habits interact together.

**SCOPE:** The knowledge, attitude, and practice survey will improve patient knowledge, attitude, and practice regarding disease and its complications, so directly contributing to the reduction of disease progression and associated complications. The results of this study will be a great tool for improving rural India's quality of life.

**PAEDIATRICS:** The field of paediatrics studies children from conception to childhood, adolescence, and maturity. From the Greek words pedia (child or relating to a kid), iatric (therapy), and ics (field of study), the word paediatrics is derived.

**PAEDIATRIC AGE GROUP CLASSIFICATION ACCORDING TO WHO GUIDELINES**

**NEONATES**- Birth to 1 month

**INFANTS**- Less than a year old

**CHILDREN**- Less than 19 years old

**ADOLESCENTS**- Between the age of 10 to 19 years old

**ADULTS**- Greater than 19 years old

## METHODOLOGY

### STUDY SITE

This study was conducted in Government District General Hospital, Karimnagar.

### STUDY DESIGN

It is hospital based a prospective cross-sectional study conducted in In-patient paediatric department.

### STUDY DURATION

The study was conducted over a period of six months.

### STUDY CRITERIA

#### Inclusion criteria

Non critical ill patients from 0-18 years admitted to the paediatric department due to any infectious diseases

Patients of both the genders.

#### Exclusion Criteria

Patients of age above 18 years, admitted to other department of hospital.

Patients admitted in paediatrics due to non-infectious diseases.

Patients who are not willing to involve (or) participate in the study.

### SAMPLE SIZE

The total number of patients included in our study at the six months of period was found to be 150.

### SOURCES OF DATA

The data was collected from patient profile, laboratory investigation and structured interview of patient representative using KAP questionaries.

**PARAMETERS TO BE CONSIDERED**

- Demographics of the patient which include age, gender, date of admission, date of discharge
- Treatment plan
- Length of hospital stay, treatment, duration of antibiotic therapy.
- Adherence of the patient towards the treatment.
- Their knowledge of using antibiotics.

**STUDY METHOD:** The study protocol was approved by the Institutional Ethics Committee (IEC) of Government District General Hospital, Karimnagar. A structured Data collection form was used to collect the data from patient profile. Data collection form was designed with the help of resources and is validated by guide. The data was collected from the medical record of patients which are filled by doctors, nurses, pharmacist, and other health care professionals. Data collected includes demographic details, medication history, diagnosis on admission, laboratory investigations, antibiotic treatment chart, length of hospital stay, duration of antibiotic therapy. On admission KAP pre-counselling questionnaires were asked about antibiotics and counselling was given to the patient representatives and KAP post-counselling questionnaires was asked on the day of discharge or one week after the discharge. For analysis, the data collected was entered into Microsoft Excel database and subjected for further analysis.

**STATISTICAL ANALYSIS:** Pre and post-counselling scores were compared using the Wilcoxon matched-pairs signed rank test in GraphPad Prism (v10.4). This non-parametric test assesses significant differences between paired samples when data is not normally distributed.

**RESULTS**

A total of 150 patients were included in the study of counselling on Knowledge, Attitude and Practice of patients on antibiotic use in paediatric population.

**Age distribution of patient's representatives in the study**

| AGE | TOTAL | PERCENTAGE (%) |
|---|---|---|
| ≤20 | 5 | 3.3% |
| 21-30 | 113 | 75% |
| 31-40 | 32 | 21% |

The table depicts the age distribution of patient representation in the inpatient paediatric department, based on research of 150 people. 5 people under the age of 20 participated (3.3%). The study included 113 people between the ages of 21 and 30 (75%). The study included 32 participants (21%) ranging in age from 31 to 40.

**Gender distribution of patient's representatives**

| GENDER | TOTAL | PERCENTAGE (%) |
|---|---|---|
| Mothers | 85 | 57% |
| Fathers | 65 | 43% |

This table categorizes data by gender, displaying the total number and proportion of patient's mother and patient's father in the dataset. 85(57%) patient's mothers (female) were participated in this study and 65(43%) are patient's father(male).

**Various infectious diseases diagnosed in the patients during the study**

| DIAGNOSIS | TOTAL | PERCENTAGE (%) |
|---|---|---|
| Viral pyrexia | 53 | 35% |
| Lower respiratory tract infections | 51 | 34% |
| Gastro intestinal tract infections | 23 | 15% |
| Upper respiratory tract infections | 9 | 6% |
| Urinary tract infections | 1 | 0.6% |
| OTHERS | 13 | 8.6% |

The table describes medical diagnoses, including the total number of cases and their percentages. VP (18) (Viral Pyrexia) contains 53 cases, accounting for 35%. VP includes VP with TCP (15), VP with bicytopenia (5), AFI with TCP (1), and AFI (14). LRTI (Lower Respiratory Tract Infection) has 51 cases, accounting for 34% of the total, with bronchiolitis (22) and bronchopneumonia (8). GIT has 23 cases (15%), including GE (13), gastritis (3), GE with VP (3), and GE with AFI (4). URTI comprises a total of 9 cases (6%), consisting of URTI (5) and ARI (4). Only a single case has been identified with a UTI (1) of 0.6%. Others include viral hepatitis (9), dengue (2), viral myositis (1), and ARI with GE (1).

**Assessment of Knowledge, Attitude and Practice Among Patient's Representative Regarding Antibiotics**

| S. NO | QUESTIONNAIRES | Pre- counselling | Post- counselling |
|---|---|---|---|
| | **KNOWLEDGE** | | |
| 1Q. | Antibiotics are used against viral and bacterial infections. | 123(82%) | 129(88%) |
| 2Q. | Antibiotics have no side effects. | 67(44%) | 113(77%) |
| 3Q. | Antibiotics resistance is a worldwide problem. | 86(57%) | 134(92%) |
| 4Q | Antibiotics are used to treat diarrhoea. | 84(56%) | 142(97%) |
| | **ATTITUDE** | | |
| 5Q | If your child was affected by the common cold, antibiotic treatment should be started after doctors' decision? | 21(14%) | 90(62%) |
| 6Q | Do you pay attention to the expiry date? | 122**(**81%) | 144(99%) |
| 7Q | Will you decide the antibiotic for the child should receive according to their condition? | 79(53%) | 124(85%) |
| 8Q | Do you prefer antibiotics which are expensive? | 92(61%) | 123(84%) |
| 9Q | Do you give your child higher dose of antibiotics than what doctor prescribed? | 40(27%) | 97(66%) |
| 10Q | Are you confident with your doctor's decision? | 142(95%) | 144(99%) |
| | **PRACTICE** | | |
| 11Q | Do you store antibiotics for future use? | 74(49%) | 127(87%) |
| 12Q | Have you ever given your child antibiotics without doctor advice? | 71(47%) | 127(87%) |
| 13Q | Do you think there is decrease in symptoms by using antibiotics? | 131(87%) | 134(92%) |
| 14Q | Have you ever given leftover antibiotics from home to your child? | 79(53%) | 128(88%) |
| 15Q | Have you ever administered antibiotics prescribed by pharmacists? | 109(73%) | 133(91%) |

## DISCUSSION

This prospective cross-sectional study, conducted in the pediatric in-patient department of District Headquarters Hospital, Karimnagar, aimed to assess parental knowledge, attitude, and practice (KAP) regarding antibiotic use among 150 patient representatives. The majority of participants were aged 21–30 years, with 57% mothers and 43% fathers. Common infections included viral pyrexia (35%) and lower respiratory tract infections (34%). Using a KAP questionnaire, the study observed a significant improvement in awareness following clinical pharmacist counselling—knowledge increased from 60% to 89%, attitude from 55% to 83%, and practice from 62% to 89%. Despite these findings, limitations included a small sample size, potential socioeconomic bias, and incomplete post-counselling responses from five participants.

## CONCLUSION

This study highlights the importance of parental knowledge on proper antibiotic use. Most participating parents were aged 21–30, with mothers making up 57%. Children were primarily diagnosed with viral pyrexia (35%) and lower respiratory tract infections (34%). During hospitalization, 84% received combination antibiotic therapy.

Before counselling, many parents had moderate understanding, with poor to average antibiotic practices and limited awareness of antibiotic resistance. After clinical pharmacists provided counselling and an antibiotic checklist, there was a significant improvement in parental knowledge, attitude, and practices ($p < 0.05$).

The study concludes that clinical pharmacists play a key role in educating parents, reducing misuse, and promoting safe antibiotic practices. Strong communication between healthcare providers and parents is essential to prevent antibiotic resistance.

## AKNOWLEDGEMENT

This dissertation would not have been possible without the guidance and the help of several individuals who in one way or another contributed and extended their valuable assistance in the preparation and completion of this study.

First and foremost, we would like to express gratitude and sincere thanks to **Dr. A. VENU** MBBS. MD. Paediatrician, Associate professor for permitting us to do clinical research at GOVERNMENT DISTRICT HOSPITAL, Karimnagar.

We are very much indebted to our Institute guide, **Dr. M. NAUFIA** Pharm D. Assistant Professor, Department of Pharmacy Practice, Sree Chaitanya Institute of Pharmaceutical Sciences, Karimnagar for encouragement, keen interest, regular observation, logical thoughts, kind co-operation and help, without which we could not have completed our work.

We wish to express our honest thanks to **Dr. K. RAMPRASAD**, Associate Professor and Head of the Department of Pharmacy, Sree Chaitanya Institute of Pharmaceutical Sciences for encouragement and helpful suggestions.

With pride and pleasure, we wish to record our sincere and heartful thanks to **Dr. A. RAMANARSIMHA REDDY**, Principal & Professor of Pharmacology, Sree Chaitanya

Institute of Pharmaceutical Sciences, Karimnagar for providing the necessary facilities to carry out this project work with great ease and precision.

We express our gratitude to the Administrative Director, **Mr. K. Narender Reddy**, Sree Chaitanya Institute of Pharmaceutical Sciences, for boosting our morale throughout the course of research.

Our special gratitude to **Sri. M. Ramesh Reddy**, Secretary and Correspondent, Takshasila Educational Society, for his kind co-operation and providing all the resources to complete our work successfully.

We sincerely thanks to **Dr. Veera Reddy** Superintendent Government General Hospital for their guidance and encouragement in carrying out this project work. I also wish to express my gratitude to the officials and other staff members of District general Hospital, Karimnagar who rendered their help during the period of dissertation work.

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