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# Assessment of Knowledge, Attitude and Practice of Parents Towards the use of Antibiotics in Children

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**ABSTRACT**

Emerging infectious illnesses can potentially have a more direct impact on everyone. Infectious illnesses demand increased attention since they contribute to high rates of morbidity and death worldwide. The misuse of antibiotics is a major contributor to the events of resistance. This study aims to understand parents' knowledge, attitudes, and practice particularly regarding the use of antibiotics. This will help in understanding and improving medication adherence, reduce the risk of antibiotic resistance, and promote rational antibiotic usage among children. An observational study was conducted in the inpatient department of Paediatrics of ESIC MC & PGIMSR hospital, Bengaluru. All the subjects (n = 88) meeting the inclusion and exclusion criteria were briefed about the purpose of the study, and informed consent was obtained using a self-designed data collection form and questionnaires. The collected data were entered, and appropriate descriptive and statistical analysis was performed. The study found that the majority of the interviewees belonged to the age group of 28 to 34 (34%). The majority of parents involved in the study were found to be mothers. Among the parents included in the study, 52% of the parents had moderate knowledge, 45% had a poor attitude, and 37% had poor practices toward the use of antibiotics. 29% of the parents were found to have poor medication adherence. A Pearson's Product Moment Correlation was performed to find the association between knowledge, attitude, and practice with variables such as knowledge, attitude, practice, age of the patient, age of parent, education, occupation, and siblings present. It did not show a significant association between KAP and medication adherence. There is a need to encourage patients to ask questions and be made aware of the programs provided about antibiotics and other medications to improve the health conditions of the patients and to encourage them to follow appropriate norms to stay healthy and to improve their immunity to avoid death or prolonged ill health by drug resistance in adults, children, or future generations.

**Keywords:** Antibiotics Resistance, KAP (Knowledge, Attitude and Practice), Pearson's Product Moment Correlation

## INTRODUCTION:

Infectious disease is caused by harmful organisms, including bacteria, fungi, parasites, and viruses that enter the body from outside, replicate, and can lead to infections. Infectious diseases are contagious or transmissible. They can be passed from one person to another by the transmission of germs in the environment, in the air, in the water, in contaminated food and soil, or even by insects that act as vectors [1].

Emerging infectious illnesses can potentially have a more direct impact on everyone. Throughout the world, infectious diseases contribute to a high mortality and morbidity rate and need more attention [2]. Antibiotics are chemical substances produced by microorganisms that are detrimental to other microorganisms causing infection. They are useful in inhibiting the proliferation of the bacteria by either killing or inhibiting its synthesis [3, 4].

Throughout the world, infectious diseases contribute to high mortality and morbidity rates [3]. According to WHO estimations 7,00,000 deaths occur per year in the world as a result of infections caused by multidrug - resistant organisms, among which 2,00,000 are new-born [5]. Antibiotics are helpful in the treatment of various bacterial infections, particularly among paediatric patients where early interventions are necessary.

In developed countries, strict laws are enforced by the government in order to prevent the dispense of antibiotics over the counter in the absence of a valid physician prescription, whereas in developing countries such as in India, antibiotics can be obtained over the counter [6,7,8].

The misuse of antibiotics is a major contributor to the events of resistance. Antibiotic resistance hinders therapeutic efficacy, increases treatment failures, and results in longer and more severe sickness episodes, as well as greater expenditures and mortality rates [9]. Currently, antibiotic resistance should be given higher priority by practitioner and healthcare workers, as it is one of the most emerging threats globally [10].

Antibiotic use, whether in adults or children, has occasionally been inappropriate, and errors in antibiotic indication, choice, dose or duration, administration, or even adherence to therapy have been known to occur [7]. The severity of adverse drug reactions could be higher in children when compared to adults and can result in significant morbidity in the paediatric population. It is inappropriate to extrapolate the safety of the drugs used in the adult group to paediatric group [11].

Evidence suggests that parents' attitude have been identified as an important reason for antibiotic abuse, the most common reason being, lack of understanding, awareness, and practice among parents regarding the use of antibiotics. The lack of information about the frequency, severity, and types of drugs is frequently causing adverse reactions in paediatric age group, as most of the pre-marketing clinical trials do not include children.

The need of the hour is to understand parents' knowledge, attitudes, and practice, particularly regarding the use of antibiotics. This will help in understanding and improving medication adherence, reduce the risk of antibiotic resistance, and promote rational antibiotic usage among children.

## MATERIALS AND METHODS:

This is a prospective observational study which was conducted in the inpatient department of Paediatrics, ESIC MC & PGIMSR hospital, Bengaluru. All the subjects (n = 88) meeting the Inclusion and Exclusion criteria were briefed about the purpose of the study, and the informed consent was obtained using a self-

designed data collection form and questionnaires. The collected data were entered into Microsoft Excel, and appropriate descriptive and statistical analysis was performed.

**Inclusion criteria:**

a. Parents of children prescribed at least one antibiotic admitted to the paediatric department of ESIC MC-PGIMSR, Bengaluru.
b. Parents of children aged between 6 months to 18 years attending the paediatric department.
c. Parents giving consent for the study are included.

**Exclusion criteria:**

a. Paediatric patients diagnosed with a critical illness or terminal illness are not included in the study.

**Statistical Analysis:**

All the data were entered into the Microsoft Excel software and analysed. Descriptive analysis and a Pearson's product correlation were done to find the association between knowledge, attitude, practice, on medication adherence, and other variables.

**RESULTS:**

The study was conducted in the Department of Paediatrics at a teaching hospital in Bangalore, over a period of 3 months. The study population was children from the age of 6 months and was administered at least one antibiotic. Parents of children were interviewed for the purpose of collecting relevant information. A total of 100 parents were interviewed, out of which 88 were included in the study based on inclusion criteria and consent provided to be part of study.

**DISTRIBUTION OF SUBJECTS BASED ON AGE AND GENDER:**

The subjects were categorized based on their age and gender. Out of 88 subjects included in the study, 25 (28%) were infants, 11 (13%) were Adolescent, pre - school were 18 (20%), and 17 (19%) were toddlers and school age child. The data is explained in table 1.

Table 1: Age and Gender distribution of subjects

| Age Group | No. of Patients | Gender of patients | | Percentage (%) |
|---|---|---|---|---|
| | | Male | Female | |
| New-born | 0 | 0 | 0 | 0% |
| Infant | 25 | 16 | 9 | 28% |
| Toddler | 17 | 11 | 6 | 19% |
| Pre school | 18 | 10 | 8 | 20% |
| School age child | 17 | 10 | 7 | 19% |
| Adolescent | 11 | 6 | 5 | 13% |
| Total | 88 | 53 | 35 | 100% |

**DISTRIBUTION OF PARENTS OF CHILDREN INTERVIEWED BASED ON AGE AND GENDER:**

Out of 88 parents of children interviewed 22(25%) parent were of 21-27 year of age, 29 (33%) were of 28-34 years of age, 31(35%) were of 35-42 years of age, and 6 (7%) were of 43-50 years of age. Out of

88 parents of children interviewed 26(30%) were fathers and 62(70%) were mothers. The data explained in table 2.

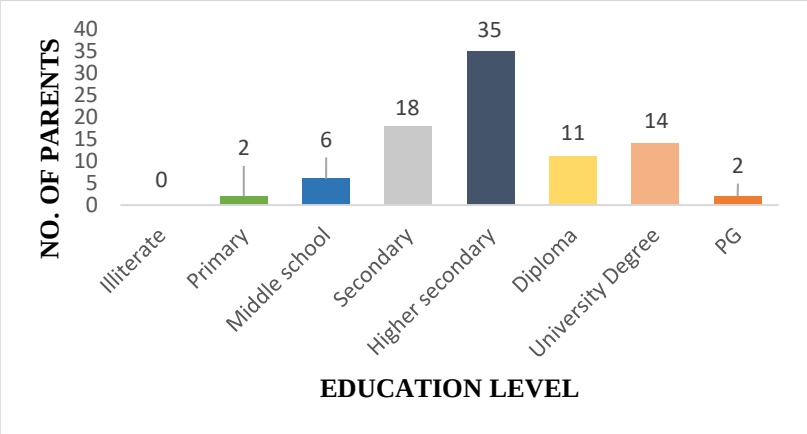
**Table 2:** Distribution of parents of children based on age

| Age group of the parents | Parents | | No. of parents (n) | Percentage (%) |
|---|---|---|---|---|
| | Father | Mother | | |
| 21 -27 | 0 | 22 | 22 | 25% |
| 28 - 34 | 10 | 19 | 29 | 33% |
| 35 - 42 | 14 | 17 | 31 | 35% |
| 43 - 50 | 2 | 4 | 6 | 7% |
| Total | 26 | 62 | 88 | 100% |

**DISTRIBUTION OF PARENTS BASED ON EDUCATION LEVEL:**

Out of 88 parents included in the study, 2(2%) were educated in primary level and post graduate level respectively, followed by 6(7%) at middle school level, 18(20%) at secondary school level, 35 (40%) were higher secondary level, 11(13%) were diploma holders and 14(16%) were having university degree. The data is described in figure 1.

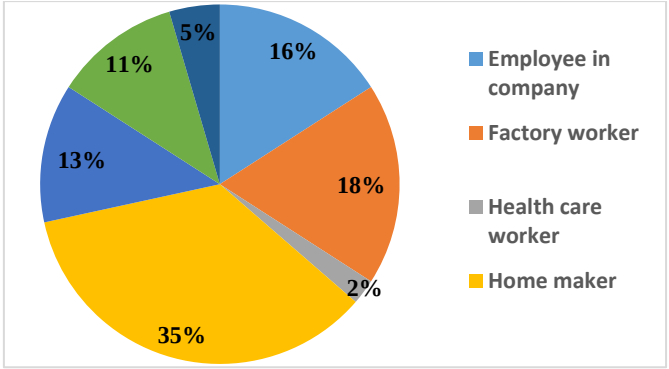
**Figure 1: Distribution of parents based on education level**




**DISTRIBUTION OF PARENTS BASED ON OCCUPATION:**

Out of 88 parents interviewed, 31(35%) of them were home maker, 16(18%) of them were factory worker, 14(16%) of them were employee in company, 10(11%) of them were self-employed, 4 (5%) of them were working as teacher, 2(2%) of them were healthcare worker and 11(13%) of them were involved in other occupation. The data is described in figure 2.

**Figure 2:** Distribution of parent based on occupation



**DISTRIUTION OF RESPONSES RECEIVED FOR KAP QUESTIONNAIRE:**

Parents of children were provided with the self-designed KAP questionnaire, (Knowledge, Attitude and Practice). The questionnaire consists of 24 questions as an instrument to assess the knowledge, attitude and practice of parents towards use of antibiotics in children. Knowledge was assessed using 8 questions, attitude using 7 questions, and practice using 9 questions.

Out of 88 parents who were asked to fill the questionnaire 83% parents knew what antibiotics were and only 26% knew that they can become ineffective if used irrationally. Only 42% of the parents knew that antibiotics are only effective against bacterial infection. 69% parents knew that antibiotics should be given as soon as they remember in case of a missed dose or forgotten dose. 35% parents did not know that antibiotics have side effects and can be detrimental for health. 66% parents did not know that frequent use of antibiotics can increase the resistance to the bacteria and decrease the future effectiveness of the medication. The data is described in table 3, 4, 5 and figure 3.

| **Table 3:Knowledge** | |
|---|---|
| K1 | Do you know what antibiotics are? |
| K2 | Do you know antibiotics are administered for? |
| K3 | Do you know what antibiotic resistance is? |
| K4 | Antibiotics should be given as soon as you remember in case of missed dose or forgotten dose? |
| K5 | Do you know antibiotics have side effects? |
| K6 | The treatment should be continued even if your child feels better before the completion of the antibiotic treatment? |
| K7 | The same antibiotics can be used for the same symptoms reappearing after a few days of stopping the antibiotics without consulting a paediatrician? |
| K8 | Do you know frequent use of antibiotics can increase the resistance to bacteria and decrease the future effectiveness of the medication? |

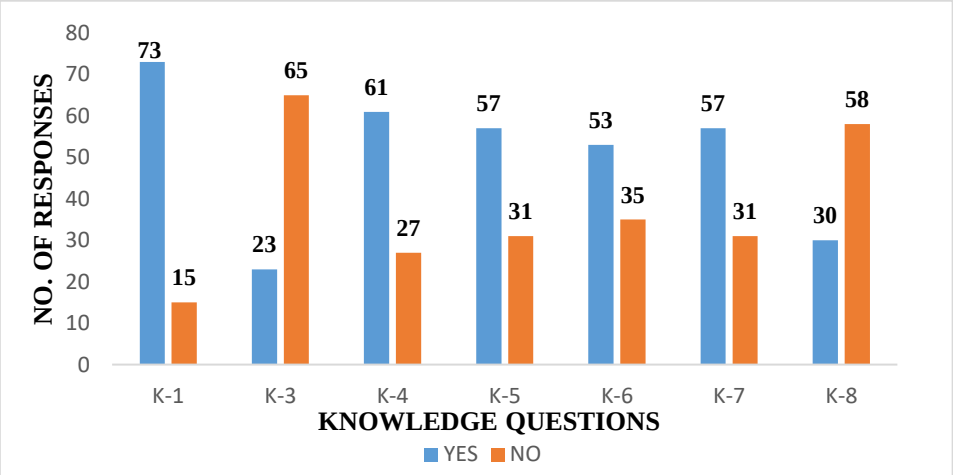
| **Table 4:** Distribution of parent's response to K2 | | |
|---|---|---|
| **Antibiotics are administered for:** | **No. of Response(n)** | **Percentage (%)** |
| Bacterial Infection, Viral Infection, Fever, Cold | 1 | 1% |
| Fever | 13 | 15% |
| Cold | 6 | 7% |
| Fever, Cold | 11 | 13% |
| Bacterial infection | 37 | 42% |
| Viral Infection | 1 | 1% |
| Parasitic Infection, Fever | 1 | 1% |
| Fungal Infection, Fever, Cold | 1 | 1% |
| Bacterial Infection, Viral Infection | 2 | 2% |
| Viral Infection, Fever, Cold | 2 | 2% |
| Bacterial Infection, Viral Infection, Fungal Infection, Parasitic Infection | 5 | 6% |

| | | |
|---|---|---|
| Bacterial Infection, Fever | 3 | 4% |
| Bacterial Infection, Fever, Cold | 2 | 2% |
| Bacterial Infection, Cold | 1 | 1% |
| Bacterial Infection, Viral Infection, Fungal Infection, Fever, Cold | 2 | 2% |

**Table 5:** A cumulative distribution of response received for assessment of knowledge

| **Response** | **K1** | | **K3** | | **K4** | | **K5** | | **K6** | | **K7** | | **K8** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| YES | 73 | 83 | 23 | 26 | 61 | 69 | 57 | 65 | 53 | 60 | 57 | 65 | 30 | 34 |
| NO | 15 | 17 | 65 | 74 | 27 | 31 | 31 | 35 | 35 | 40 | 31 | 35 | 58 | 66 |

**Figure 3:** A cumulative distribution of response received for assessment of knowledge




Parents were given with attitude questionnaire. A 5-likert scale was used to understand the attitude of the parent towards the use of antibiotics. 4% of the parents strongly disagreed with stopping the antibiotic in case the patient presents with a rash or allergies. 41% of the parent strongly agreed to check the expiry date of antibiotic during purchase and before giving them to patient. 24% parents' responses were neutral, 8% parents' strongly disagreed and 13% parents' disagreed, respectively, on taking the initiative to ask the doctor how to take the antibiotics. The data is explained in tables 6, 7 and figure 4.

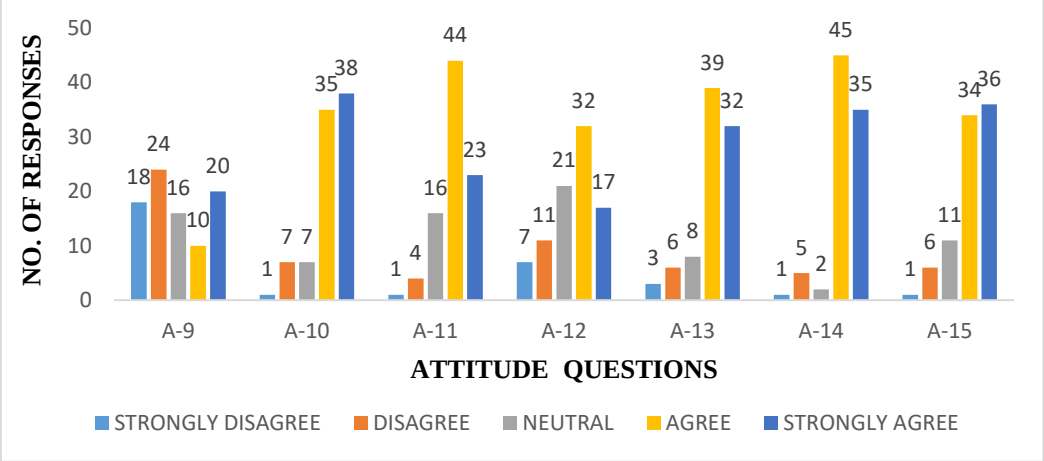
| **Table 6 :Attitude** | |
|---|---|
| A1 | Do you agree that an Antibiotic is required every time when the child falls sick? |
| A2 | Do you agree Antibiotics should always be prescribed by a doctor? |
| A3 | Do you have the confidence to trust the doctor's decision not to prescribe antibiotics to your child? |
| A4 | Do you have the confidence to trust the doctor's decision not to prescribe antibiotics to your child? |
| A5 | Do you agree that antibiotic should be stopped if the child presents with rashes or allergies? |

| | |
|---|---|
| A6 | Do you agree that a paediatrician should be consulted for stopping the antibiotic in case of rashes or allergies? |
| A7 | Do you agree that the expiry date of antibiotics should always be checked during purchasing and before giving them to your child? |

**Table 7:** A cumulative distribution of response received for assessment of attitude

| Response | A9 | | A10 | | A11 | | A12 | | A13 | | A14 | | A15 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| Strongly Disagree | 18 | 21 | 1 | 1 | 1 | 1 | 7 | 8 | 3 | 4 | 1 | 1 | 1 | 1 |
| Disagree | 24 | 27 | 7 | 8 | 4 | 5 | 11 | 13 | 6 | 7 | 5 | 6 | 6 | 7 |
| Neutral | 16 | 18 | 7 | 8 | 16 | 18 | 21 | 24 | 8 | 9 | 2 | 2 | 11 | 12 |
| Agree | 10 | 11 | 35 | 40 | 44 | 50 | 32 | 36 | 39 | 44 | 45 | 51 | 34 | 39 |
| Strongly Agree | 20 | 23 | 38 | 43 | 23 | 26 | 17 | 19 | 32 | 36 | 35 | 40 | 36 | 41 |

**Figure 4: A cumulative distribution of response received for assessment of attitude**




Out of 88 parents 31 (35%) parents administer antibiotics to their child without a prescription, and 57 (65%) parents do not administer antibiotics to their child without a prescription, and 31 (35%) parents have purchased antibiotics without a doctor's prescription for their child. 34 (39%) parents have used leftover antibiotics from previous prescriptions for their child. 67 (76%) parents have given their child the complete course of antibiotics as prescribed by the doctor. 31 (35%) parents have not used the same antibiotics for the similar symptoms appeared after stopping the antibiotic. 53 (60%) parents do not visit their paediatrician after the course is completed or if the child is better. 32 (36%) parents have used the same antibiotic for the family members or siblings of the child when they get sick with the same symptoms as the child. The data is explained in tables 8, 9 and figure 5.

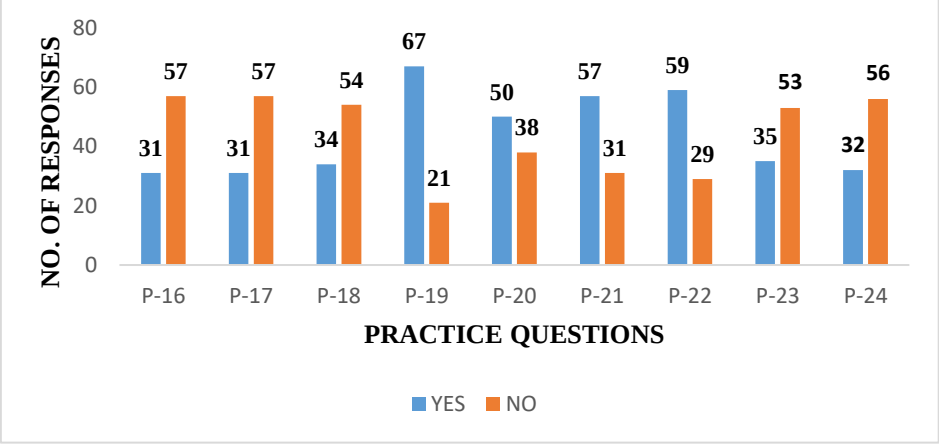
| | **Table 8 :Practice** |
|---|---|
| P1 | Have you administered antibiotics to your child without a prescription? |
| P2 | Have you purchased antibiotics without doctors' prescriptions for your child? |
| P3 | Have you used leftover antibiotics from previous prescription for your child? |

| | |
|---|---|
| P4 | Have you given the complete course of antibiotic as prescribed by the doctor to your child? |
| P5 | Have you ever stopped the medication in between the course of treatment if your child feels better? |
| P6 | Have you used the same antibiotic for similar symptoms appeared after stopping the antibiotic? |
| P7 | Do you keep the medications in a separately closed container? |
| P8 | Do you revisit your paediatrician after the course is completed or if the child is better? |
| P9 | Have you ever used the same antibiotic for the family members or siblings of the child when they get sick with the same symptoms as the child? |

**Table 9:** A cumulative distribution of response received for assessment of practice

| Response | P16 (%) | P17 (%) | P18 (%) | P19 (%) | P20 (%) | P21 (%) | P22 (%) | P23 (%) | P24 (%) |
|---|---|---|---|---|---|---|---|---|---|
| YES | 31 (35) | 31 (35) | 34 (39) | 67 (76) | 50 (57) | 57 (65) | 59 (67) | 35 (40) | 32 (36) |
| NO | 57 (65) | 57 (65) | 54 (61) | 21 (24) | 38 (43) | 31 (35) | 29 (33) | 53 (60) | 56 (64) |

**Figure5:** A cumulative distribution of response received for assessment of practice




Parents of children were administered a Simplified Medication Adherence Questionnaire, (SMAQ). The questionnaire consists of six questions as an instrument to assess the medication adherence of the patient by parents towards the use of antibiotics in children. Out of 88 parents, only 82 parents responded to simplified medication adherence questionnaire. Out of 82 responses, 32 (36%) of the parents forgot to give the medications, and 10 (12%) of the parents were careless at times about taking the medicine. 6 (44%) of parents have skipped medication 1-2 times. 58 (71%) parents were found to be adherent and 24 (29%) parents were non-adherent to the use of antibiotics in children. The data is explained in tables 10, 11.

| **Table 10: SIMPLIFIED MEDICATION ADHERENCE QUESTIONNAIRE** | |
|---|---|
| SMAQ 1 | Do you ever forget to take your medicine? |

| | |
|---|---|
| SMAQ 2 | Are you careless at times about taking you medicine? |
| SMAQ 3 | Sometimes if you feel worse, do you stop taking your medicines? |
| SMAQ 4 | Did you miss any of your medications last weekend? |
| SMAQ 5 | Think on the last week. How often did you missed to take any medication? |
| SMAQ 6 | How many days have you missed taking all your medicines during the past 3 months? |

**Table 11:** A cumulative distribution of response received for assessment of practice

| questions | yes | | no | |
|---|---|---|---|---|
| | no. of response | percentage | no. of response | percentage |
| smaq1 | 42 | 51% | 40 | 49% |
| smaq2 | 10 | 12% | 72 | 88% |
| smaq3 | 44 | 54% | 38 | 46% |
| smaq4 | 33 | 40% | 49 | 60% |

**Table 12:** Distribution of parent's response to SMAQ 5

| Response | No. of response (n) | Percentage (%) |
|---|---|---|
| Never | 40 | 49% |
| 1- 2 times | 36 | 44% |
| 3-5 times | 6 | 7% |
| 6-10 times | 0 | 0% |
| >10 times | 0 | 0% |

**Table 13 :** Distribution of parent's response to SMAQ 6

| No. of days | No. Responses (n) | Percentage (%) |
|---|---|---|
| Never | 25 | 31% |
| 1 to 3 | 40 | 49% |
| 4 to 6 | 14 | 17% |
| 7 to 9 | 2 | 2% |
| 10 to12 | 1 | 1% |

**ASSOCIATION OF KNOWLEDGE ATTITUDE AND PRACTICE WITH MEDICATION ADHERENCE AND OTHER VARIABLES:**

A Pearson's Product Moment Correlation was performed to find the association for knowledge, attitude and practice with variables such as knowledge, attitude, practice, and age of the patient, age of parent, education, occupation, siblings present. (Table 14)

It was observed that all the variables were directly correlated to each other. It was also observed that Knowledge and attitude (r = 0.347) were moderately correlated whereas, attitude and practice (r = 0.336) were directly correlated. Hence, it is evident that those who have the knowledge about antibiotics and their possible resistance need not always have the attitude to follow the provided prescription strictly. However,

those who are having the attitude to adhere to the prescribed medication and to follow all prescribed guidelines for use seem to have better practice.

A moderate direct correlation was observed between education and knowledge (r = 0.282) of the subjects as well as between occupation and knowledge (r = 0.220) of the subjects. Thus it is evident that knowledge about the medication use is moderately dependent upon education and occupation of the parent. A moderate direct correlation was observed between the attitude and age of the parent (r = 0.238), and between attitude and occupation (r = 0.287). Such a correlation is indicative that the attitude of parent towards rationale use of antibiotics in their children is partially dependent on their age and the job they perform.

The study also revealed a low positive correlation between attitude and education (r=0.029) of the parents, practice and education (r=0.010), and practice and age of parent (r=0.161). It was also seen that there exists a low positive correlation between age of parent and knowledge (r=0.024) and practice and occupation (r=0.063). Thus, the study revealed that there was very less direct influence on appropriate use of antibiotics in children, even though the parents belonged to various age group and were educated at different levels having various occupation.

The study also found out that there was a low direct correlation for attitude and sibling presence (r=0.001) and practice and sibling presence (r=0.163). The study also observed an indirect correlation between knowledge and sibling presence (r= -0.020). The above data indicates that irrespective of the knowledge the parent has regarding the use of antibiotics, they still do not seem to practice it when it comes to the siblings of the patient being sick.

**Table 14:** Correlation scores (r value) or Knowledge, Attitude and Practice along with demographic variables (n=88)

| Variable | Knowledge | Attitude | Practice |
|---|---|---|---|
| Knowledge | 1 | 0.347 | 0.152 |
| Attitude | 0.347 | 1 | 0.336 |
| Practice | 0.152 | 0.336 | 1 |
| Age of parent | 0.024 | 0.238 | 0.161 |
| Education | 0.282 | 0.029 | 0.01 |
| Occupation | 0.22 | 0.287 | 0.063 |
| Sibling | -0.02 | 0.001 | 0.163 |

A Pearson's Product Moment Correlation was done for parents who have answered both KAP and Medication adherence (n =82). (Table 15)

The study revealed that there exists a moderately direct correlation between knowledge and attitude (r=0.361) of parents as well as attitude and practice (r=0.350) of the parents. There is also a low direct correlation between the practice and knowledge (r=0.183). Thus the study showed that attitude practice and knowledge are dependent on each other.

It was observed that there is an indirect correlation between medication adherence, knowledge, attitude and practice variables. There is a high indirect correlation between medication adherence and knowledge

(r= -0.078). It was also observed that there is a low indirect correlation between medication adherence and attitude (r= -0.131) and between medication adherence and practice(r= -0.162). It was understood that having knowledge and attitude regarding medication adherence does not seem to influence its practice at any level.

**Table 15:**Correlation scores(r value) for Knowledge, Attitude and Practice variables (n=82)

| Variable | Knowledge | Attitude | Practice | Medication adherence |
|---|---|---|---|---|
| Knowledge | 1 | 0.361 | 0.183 | -0.078 |
| Attitude | 0.361 | 1 | 0.35 | -0.131 |
| Practice | 0.183 | 0.35 | 1 | -0.162 |
| Medication adherence | -0.078 | -0.131 | -0.162 | 1 |

A Pearson's Product Moment Correlation was done to find the association between Medication adherence with other variables such as education level and occupation and sibling presence (n = 82). (Table 16) Low indirect correlation between medication adherence and education (r= -0.196) was observed. This means, there is no relation between education and medication adherence.

It was also observed that there is a low direct correlation between medication adherence and nature of occupation (r=0.152). It is seen that there is a high indirect correlation between sibling presence and medication adherence (r= -0.098). From the study, it was noted that the nature of job of the parent has very little influence towards medication adherence. However, medication adherence is not related to the presence of another child in the house.

**Table 16:** Correlation scores (r value) for Medication adherence scores and demographic variables (n=82)

| Demographic Variables | Medication adherence |
|---|---|
| Education | -0.196 |
| Occupation | 0.152 |
| Sibling | -0.098 |

**DISCUSSION:**

This observational study was conducted in the Department of Pediatrics at a teaching hospital in Bangalore for a duration of 3 months. A total of 100 parents were interviewed, of whom 88 were included in the study based on the inclusion and exclusion criteria provided as part of the study. The parents of the subjects were given a KAP and medication questionnaire.

The subjects included in the study are categorized based on age and gender, out of which majority (28%) of the subjects were infants, and (60%) were male and (40%) were female.

The parents of the children interviewed were categorized based on the parent's age, education, and occupation. The majority of the parents belonged to the age group of 35 - 42 (35%) and the age group of 28 - 34 (34%). The majority of the parent interviewed were mothers (70%) and (30%) were fathers. The majority of the parents were found to have education till higher secondary (40%). The parents interviewed were mainly homemakers (35%). A similar study conducted by **Agarwal S et al.,** and **Chakraborty K et**

**al.,** showed that (56.1%) and (55.9%) of the respondents were mothers. (56.9%) parents were graduates, and (43.8%) of participants studied up to secondary level respectively [2, 11]

In this study, it was found that the majority of the parents had moderate knowledge (52%). The study showed that the majority of the parents knew about what are antibiotics (83%) but only (26%) of the parents know about antibiotic resistance and (34%) of parents knew that frequent use of antibiotics can increase the resistance to the bacteria and decreases the future effectiveness of the medication. (42%) said that antibiotic is given only for bacterial infections. The majority of the parents said that the same antibiotics can be used for the same symptoms reappearing after a few days of stopping the antibiotics without consulting a paediatrician (65%). This differs from the study by **Chinnasami B et al.,** in which the author observed a high level of misunderstanding about the use of antibiotics and 17.2% were aware that antibiotics are not effective against viruses and less than half knew that bacterial infections are treated with antibiotics. Also, they observed 47.2% of respondents were aware of antibiotic resistance and 45% of side effects related to antibiotic usage. A study by **Agarwal S et al.** showed that only 15.5% of parents were aware of the term antibiotic resistance which is less compared to our study findings [12, 2].

In this study, it was found that (45%) of parents have an inappropriate attitude toward the use of antibiotics. The majority of the parents disagreed that antibiotics should not be given whenever the child falls sick(27%) while some parents agreed and strongly agreed that antibiotics should be given whenever the child falls sick(11%) and (23%) respectively. The study showed that (45%) of parents do not take initiative to talk to doctors about the use of antibiotics. The result of the study differs from the study conducted by **Hamzah M. Alkhalifah et al.,** in which the author observed that (71.7%) were having an appropriate attitude toward antibiotic use. Another study by **Chakraborty K et al.** showed a similar result of antibiotic usage whenever a child suffers from vomiting, fever, loose motion (30.3%) [23, 11].

The study showed that (63%) practice of the parents was appropriate. (35%) Parents said that they have purchased and given antibiotics to their children without a prescription. (24%) parents have not given the complete course of antibiotics as prescribed by the doctor to their child. (57%) have practiced stopping the medication in between the course of treatment if your child feels better. (65%) parents have given the same antibiotic for similar symptoms that appeared after stopping the antibiotic. (60%) parents do not revisit the paediatrician after the completion of the treatment or if the child feels better. A similar study by **Hamzah M. Alkhalifah et al.** showed an overall (68.3%) appropriate antibiotic practices among the study participants [23]

The study also showed that (36%) of parents used the same antibiotic for the family members or siblings of the child when they get sick with the same symptoms as the child.

Out of 88 parents interviewed only 82 parents answered the medication adherence questionnaire. The study showed that the overall non-adherence by the parents to children was observed to be (29%) by using a simplified medication adherence questionnaire. The study showed that (12%) of the parents were careless at times about giving the medications to the child and (36%) of the parents forget to give the medications. (54%) of the parent responded that they stop taking the medicines when the child feels worse. (44%) of the parents, 1-2 times have missed giving medications. A study conducted by **Vikram R. Goudar et al.,** showed (62.36%) had poor compliance and, (62%) skipped less often (≤5 times). taste (67%), quantity (52%), apparent recovery (62%), school (65%), sleeping (56%), timing with food (47%), and bottle getting finished (49%) were the reasons for missing the dose of medicine, which differs from our study findings and also another study by **Marion Warembourg et al., (**55.3%) participants were considered non-adherent. Dose modification was seen in 52.6% of patients. Another study conducted

by **Dipen V. Patel et al.,** showed a similar observation of overall non-compliance at paediatric OPD to be (29.6%) while (17.4%) did not finish the full course [21, 20, 19].

A Pearson's Product Moment Correlation was performed to understand the correlation between knowledge, attitude, and practice with medication adherence and other variables. The study revealed that there was no specific significant correlation among the variables to say that they are dependent on each other. Although there was a very slight relation was seen between knowledge and attitude with ($r = 0.347$) and between attitude and practice with ($r = 0.336$). The study did not show any relation between the KAP and medication adherence to antibiotic medication use.

## CONCLUSION:

Antibiotics are used to treat infections caused by bacteria that are harmful to humans. These drugs work by either preventing the growth of harmful bacteria or destroying those that are present in the body. The administration of antibiotic medication is the single most important step in the process of treating bacterial infections. Its purpose can be preventative, diagnostic, or curative. Effective drug management has been shown to shorten hospital stays and enhance patients' quality of life. A child's parents are the single most influential people in their lives. The medications provided with the knowledge of the parent can have an impact on the child's health.

The availability of these antibiotic medications is very limited for the pediatric age group. Inappropriate use of these antibiotic medications can cause a wide variety of antibiotic resistance in children. This can lead to the reduced effect of medications. It can also be ineffective for future generations, which can lead to inappropriate care for the patients. It is important that parents use antibiotic medication with caution and rationally in children.

This study helps us to understand what parents understand about the use of antibiotic medications in children. The study did not show any significant influence of knowledge, attitude, and practice on medication adherence. Even though parents know antibiotics, it did not help them or influence them to follow the prescription strictly.

There are many approaches and awareness programs provided to the general public. But the influence of these programs has not reached its full potential and spread among the public about the appropriate use of antibiotics. Pharmacists can provide appropriate counseling while purchasing the medication or during their rounds in the hospital can help improve the use of antibiotic medication. Physicians should also encourage patients to ask questions during routine follow-ups. Parents should be encouraged to ask queries to any healthcare professionals who can help to provide appropriate suggestions, home nursing, or healthcare services to the patient in time. Which will help them improve their health conditions and reduce the occurrence of antibiotic resistance.

Patients should be made aware of the programs provided about antibiotics and other medications to improve their health conditions and encourage them to follow appropriate norms to stay healthy and improve their immunity to avoid death or prolonged ill health from drug resistance in adults, children, or to future generations.

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