

## KNOWLEDGE AND PRACTICE OF ANTI-ANTIBIOTIC USE AMONG MOTHERS OF CHILDREN UNDER 5 YEARS WITH ACUTE RESPIRATORY INFECTION IN DONG HUNG HOSPITAL - THAI BINH PROVINCE

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### ABSTRACT

**Objective:** To examine the knowledge and practice of antibiotic use among mothers of children under 5 years old with acute respiratory infection at Dong Hung General Hospital - Thai Binh province in 2020. **Method:** Cross-sectional descriptive study was conducted on 97 mothers of children under 5 years old with acute respiratory infections treated at Dong Hung General Hospital from March to June 2020. **Results:** The proportion of mothers having knowledge of using antibiotics was 34%. Average score of knowledge on using antibiotics of mothers was  $7.85 \pm 4.05$  out of the total score of 18. The rate of mothers who practiced using antibiotics was 43.3%. The mothers' average score of antibiotic use was  $6.3 \pm 2.09$  out of a total score of 12. The results of mother knowledge indicated that

only 22.7% knew antibiotics were not used to treat viral infections. 28.5% reported that not all cases of fever should use antibiotics, 60.8% of mothers indicated that they should give antibiotics to their children according to the previous prescription if the child got sick with the same symptoms as the previous one. 85.6% of the participants reported that they bought antibiotics according to the sellers' suggestion and shared antibiotics with their relatives. **Conclusion:** Mothers' knowledge and practice on antibiotic use were limited. Therefore, it is essential to promote maternal health education on the proper use of antibiotics, which health care providers were main responsible.

**Keywords:** Use of antibiotics; antibiotic resistance; acute respiratory infections.

### 1. INTRODUCTION

Antibiotics are the one of the most important therapies for treating illnesses, effectively treating life-threatening infections and preventing infectious complications from common medical and surgical interventions. However, overuse of antibiotics in the healthcare, animal husbandry and agricultural industries has

allowed microorganisms to adapt to the drug, causing many types of bacteria to become resistant [1]. The burden of drug resistance is increasing due to the increased cost of treatment, prolonged treatment days, affected the patient's health, the community and the general development of the society. Currently, the synthesis of new antibiotics does not keep up with the antibiotic resistance of bacteria strains. Antibiotic resistance has become an urgent issue, requiring a concerted effort to help mankind avoid the danger of returning to the era without antibiotic [1].

There are many causes of drug

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resistance; in which, inappropriate use of antibiotics is the most important factor stemming from the limited awareness of antibiotic use [1]. Buying the medicine doctor's prescription is quite common in Viet Nam as well as in many countries around the world. A higher probability of using antibiotic without doctor's prescription is common in people with less knowledge of antibiotic [2]. Therefore, raising awareness and changing the behavior of using antibiotics for the community is essential to reduce antibiotic resistance.

Children are a group whose drug use depends entirely on relatives, the most of which are mothers of children. However, mothers often using antibiotic without doctor's prescription when their babies are sick [2]. Therefore, mothers' good knowledge of antibiotics and proper use of antibiotics will help children use drugs safely and effectively, contributing to reducing drug resistance.

Dong Hung General Hospital examined and treated about 2364 children under 5 years old with acute respiratory infections each year. In the first 6 months of 2020, 405 children infected with acute respiratory infections (ARIs) with indications to test antimicrobial susceptibility, in which 294 children were detected with antibiotic resistant. The researcher conducted the study to join hands to work out in the national action plan on combating drug resistance, implement the slogan "No action today means no cure tomorrow" of the World Health Organization in 2011. The research will provide a basis for the implementation of necessary interventions to increase the proper use of antibiotics. The study was conducted with the aim to describe the knowledge and practice of antibiotic use among mothers of children under 5 years old with an acute respiratory infection at

Dong Hung General Hospital, Thai Binh province in 2020

## **2. RESEARCH METHOD**

### **2.1. Participants:**

The participants were mothers of children under 5 years old with acute respiratory infections at Dong Hung General Hospital, Thai Binh province from March to June 2020. The participants were collected using the following five inclusion criteria: Mothers of children under 5 years old with acute respiratory infections who treated at Dong Hung General Hospital, Thai Binh province from March to June 2020; The mother agreed to participate in the study; The mothers had the ability to answer questionnaires.

### **2.2. Setting and time of study:**

The study was conducted at the Department of Pediatrics and Department of Ear - Nose - Throat, Dong Hung General Hospital, Thai Binh province.

The study was conducted from December 2019 to June 2020. The data were collected from March to June 2020.

**2.3. Research design:** The research used the cross-sectional descriptive design

### **2.4. Sample size and sampling**

\* **Sample size:** The study used the total sampling method to recruited 97 mothers of children under 5 years old with acute respiratory infections.

\* **Sampling:** All mothers of children under 5 years old with acute respiratory infection treated at the Department of Pediatrics and Ear - Nose - Throat, Dong Hung General Hospital, Thai Binh province since March to June 2020 who met the inclusion criteria. The research team selected 97 eligible mothers to participate in the study.

## 2.5. Instrumentations

The knowledge interview questionnaire was adapted from the Antibiotic User Guide issued together with Decision No. 708 / QD-BYT dated March 2, 2015 of the Ministry of Health [1] and the questionnaire was developed by Vu Hong Nhung [3]. There were 3 self-report questionnaires used for data collection:

\* A demographic questionnaire was developed by the researcher

\* The knowledge of antibiotic use questionnaire: The measurement included 18 questions from B1 to B18. To assess knowledge of using antibiotics, the participants were asked to classify their knowledge level into 02 levels of passed and failed. Relying on the mothers' answers to assess their knowledge of antibiotic use. Each correct answer got 1 point, each incorrect or unknown answer got 0 point. The total summed scores can range from 0 to 18. If the total score of knowledge were more than 10 points, indicated that the mother had knowledge of using antibiotics and the knowledge score were under 10 points, indicated that the mother had no knowledge of using antibiotics.

\* The mothers' knowledge of practicing antibiotic use: The measurement included 12 questions from questions B19 to B30. To assess knowledge of practicing antibiotic use, the participants were asked to classify their knowledge of practicing antibiotic use into 02 levels of passed and failed. Each correct answer got 1 point, each incorrect answer got 0 point. The total summed scores can range from 0 to 12. If the total score of knowledge of practicing antibiotic use were more than 7 points, indicated that the mother had knowledge of practicing antibiotic use and the score were under 7, indicated that the mother had no knowledge of practicing antibiotic use.

## 2.6. Data analysis

All data were analyzed by using a SPSS 20.0 program. Descriptive statistics were used to describe characteristics of the participants and compare means. Statistical significance level was set at  $p < 0.05$ .

## 2.7. Protection of human subjects:

- The study was conducted at Dong Hung General Hospital after getting the approval and permission of the hospital's Board of Directors.

- All research participants were clearly explained specifically about research purposes, research contents and voluntarily participation.

- All information about the research participants were kept confidential.

## 3. RESULTS

### 3.1. Participant's characteristics

The average age of mothers was  $29.3 \pm 9.7$ ; The group of mothers with 2 children accounted for the highest proportion with 43.3%. Mothers mainly lived in rural areas, accounting for 92.8%. The proportion of mothers with education from secondary school or lower is quite high at 71.1%, mothers with jobs as workers accounted for the most with 36.1%. 70.1% of mothers had information about antibiotic use. However, there were still up to 29 mothers (accounting for 29.9%) who did not have an information source. Among sources of information received, the majority of information sources were from medical staff, accounting for 56.7%. Health care providers were the most reliable source of information chosen by mothers the most, accounting for 84.5%.

### 3.2. Mother knowledge and practice of antibiotic use

**Table 1. General mother knowledge and practice of antibiotic use (n=97)**

Contents	Pass		Not pass	
	n	Percentage	n	Percentage
Knowledge of antibiotic use	33	34	64	66,0
Practice of antibiotic use	42	43,3	55	56,7

**Table 2. Mother knowledge and practice of antibiotic use (n=97)**

Contents	Mother response			
	Right response		Wrong response	
	n	Percentage	n	Percentage
Antibiotics are not anti-inflammatory drugs	16	16,5	81	83,5
Antibiotics are not used to treat viral infections	22	22,7	75	77,3
Scientists are not always able to produce new antibiotics	10	10,3	87	89,7
In most cases of the common cold, antibiotic treatment is not necessary	59	60,8	38	39,2
Not all cases of fever should use antibiotics	25	25,8	72	74,2
A cough, runny nose or sore throat is not always treated effectively with antibiotics as soon as possible.	30	30,9	67	69,1
Do not stop taking antibiotics when the illness has decreased	43	44,3	54	55,7
When a child refuses to take antibiotics, the dose should not be divided into several meals to take gradually throughout the day	47	48,5	50	51,5
Combining multiple antibiotics is not always more effective than using just one	44	45,4	53	54,6
Usually oral antibiotics are better than an injection antibiotic	31	32,0	66	68,0
Antibiotics should only be used with a doctor's prescription	78	80,4	19	19,6
Antibiotics have side effects	70	72,2	27	27,8
Overuse of antibiotics increases the risk of antibiotic resistance	49	50,5	48	49,5
Antibiotic-resistant bacteria can be spread from person to person	19	19,6	78	80,4

A large proportion of mothers mistakenly thought that antibiotics were anti-inflammatory drugs, accounting for 83.5%; Only 10.3% of mothers knew that scientists cannot always produce new antibiotics. Up to 69.1% of mothers said that antibiotics help to cure quickly when suffering from a cough, runny nose or sore throat; Only 25.8% of mothers answered correctly, not all cases of fever used antibiotics. More than half of mothers, accounting for 55.7%, had incorrect knowledge when they think that antibiotics should be stopped when the disease has decreased. The majority of mothers, accounting for 80.4%, answered correctly when they said that antibiotics should only be used with a doctor's prescription. More than half of mothers (50.5%) answered that overuse of antibiotics increases the risk of antibiotic resistance. Only 19.6% of mothers reported that antibiotic-resistant bacteria could spread from person to person.

**Table 3. Mother practice of antibiotic use (n=97)**

Contents	Mother response			
	Right response		Wrong response	
	n	Percentage	n	Percentage
Use an antibiotic without a doctor's prescription	31	32,0	66	68,0
Buy antibiotics according to the seller's recommendation	5	5,2	92	94,8
Use the remaining antibiotic from the previous treatment	54	55,7	43	44,3
Buy and store antibiotics for prevention	58	59,8	39	40,2
Use antibiotics as suggested by relatives, neighbors (not medical staff)	46	47,4	51	52,6
Give your child a full immunization according to the instructions	61	62,9	36	37,1
Regularly clean your child's hands	51	52,6	46	47,4
Ask your pediatrician to prescribe more antibiotics	66	68,0	31	32,0
Share antibiotics with loved ones	14	14,4	83	85,6

The results indicated that most mothers (94.8%) and (85.6%) incorrectly answered the content of buying antibiotics as suggested by drug sellers and sharing antibiotic drugs with loved ones. A not small percentage, accounting for 32% of mothers, answered that they asked the pediatrician to prescribe more antibiotics. 37.1% and 47.4% of mothers did not have proper knowledge about the contents of vaccination to their children fully according to the instructions and regularly sanitize their hands to help good practice in using antibiotics and prevention of antibiotic resistance

**Table 4. Average score of knowledge and practice of antibiotic use by mothers**

Score	Min	Max	$\bar{X} \pm SD$
Knowledge of antibiotic use	0	17	7,85 ± 4,05
Practice using antibiotics	1	11	6,30 ± 2,09

Average score of mothers' knowledge about antibiotic use was only  $7.85 \pm 4.05$ ; The lowest score was 0 and the highest score was 17 out of the total score of 18. The practical average score on antibiotic use was only  $6.30 \pm 2.09$  with the lowest score of 1 and the highest score of 11 out of the total score of 12

#### 4. DISCUSSION

##### 4.1. Mother general knowledge and practice of antibiotic use

The results from Table 3.1 indicated that mothers' knowledge and practice of using antibiotics were low. The proportion of mothers with knowledge of using antibiotics was lower than the practice of using antibiotics (34% compared to 42.3%). The research results were similar to those of Vu Hong Nhung with 32.9% of the participants having knowledge of antibiotic use [3]. Lower than Chu Thi Dao's study with 37.4% of mothers had correct knowledge of antibiotic use [4]. This result was due to the fact that in our study location the proportion of mothers who lived in rural areas with a college or university education or higher is 92.8% and 28.9% respectively. The corresponding rates in Chu Thi Dao's study were 61% and 65.7%, respectively [4]. On the other hand, in the study, 29.9% of mothers did not receive information on antibiotic use from any source while this rate in Chu Thi Dao's study was lower with 5.1% [4].

##### 4.2. Mother knowledge of antibiotic use

Although antibiotics are common, there are not many people who know their target for action. Only 22.7% of mothers in the study knew that antibiotics were not used to treat viral infections. This result was similar

to the study of Chu Thi Dao with the rate of 22.1% [4]. Higher results were found in the study of Al-Ayed M.S.Z with 38.6% [5]. This rate is not the same in the studies due to the different research locations, the education background as well as the educational level of the research participants (MSM) in each location.

Most mothers, 60.8%, reported that antibiotics were not necessary for most common colds and 64.9% answered that antibiotics were not used to prevent colds for their children. This result is similar to the study of Vu Hong Nhung with the rates of 59.3% and 61% respectively [3]. The lower results was found in the study of Al-Ayed M.S.Z with the rate of 65% and 82.9%, respectively [5]; In the study of Yu M et al. 70.4% of respondents reported that antibiotics are not necessary for most common colds but only 56.9% answered that antibiotics are not used to prevent colds in children [6].

The results of our study showed that up to 69.1% of mothers did not know that antibiotics do not always cure a cough, runny nose or sore throat. However, this rate also found in the study of the author Vu Hong Nhung was 63.7% [3]; Yu M et al. 49.9% [6]. In Chu Thi Dao's study, 37.7% of mothers knew that antibiotics should not be used for children with upper respiratory tract infections (caused by the virus, only 22.1% of mothers knew that antibiotics could not prevent complications of upper respiratory tract infections caused by viruses [4].

Fever is an increase in body temperature for a variety of reasons, antibiotics are not always used when there is a fever. However, the number of mothers who knew that was very small proportion of 25.8%. The results were similar to other research of Al-Ayed M.S.Z (27%) [5]; Yu M (30.6%) [6]. The lower results in Chu Thi Dao's study with 54.8% of mothers mistakenly believed that antibiotics should be used for their children when the fever starts [4]. The explanation for this is a lack of knowledge and parents' concern about the consequences of fevers. The above results indicated that there was a large gap that needs to be supplemented in mothers' knowledge of antibiotic indications.

Like any other medicine, the antibiotic can cause side effects for the user. However, not everyone knew the exact side effects of antibiotics. Out of 544 respondents in the Al-Ayed M.S.Z study, up to 466 people incorrectly answered questions regarding antibiotic side effects [5]. Chu Thi Dao's study had similar results while only 17.9% of mothers reported that antibiotics had side effects. The result in the study was 72.2% which is quite similar to the study of Vu Hong Nhung (68.5%) [3] and Yu M (70.2%) [6]. Knowing the possible side effects of antibiotics correctly may help mothers to be more cautious about using antibiotics for their children, however, due to inadequate knowledge, mothers stopped antibiotics as the disease got a little bit improvement. This in turn contributed to antibiotic resistance.

To ensure effective use of medicine, limit antibiotic resistance when the medicine is overused, antibiotics have been included in the list of prescription medicine. A good proportion of 80.4% of mothers in the study answered that antibiotics should only be used with a doctor's prescription. This result is similar to research of WHO [7]. However,

there is a considerable mistake when up to 60.8% of mothers responded that they should give antibiotics to their children according to the previous prescription if the child gets sick with the same symptoms as the previous illness. Despite the use of prescribed antibiotics, this was the significant mistake that contributed to drug resistance stemming from confidence in personal experience in caring for a sick child and inadequate understanding of mothers about children's diseases as well as knowledge about antibiotic use. The mistake is common in many countries, especially lower income ones. The results of the WHO multinational survey showed mixed results for each country Nigeria (56%), India (52%), Indonesia (51%), Viet Nam (45%), Sudan (34%). ), Mexico (26%) [7].

Proper use of antibiotics contribute to reducing antibiotic resistance, while understanding the causes and consequences of antibiotic resistance is likely to help users consider the benefits and risks of using antibiotics. However, many people were unfamiliar with the term antibiotic resistance and when heard, not everyone knew the causes and consequences of it. The WHO multinational survey found that 70% of respondents in all surveyed countries answered that they had heard the term antibiotic resistance [7]. Perhaps this is the reason why many people are unaware that antibiotic resistance is largely driven by antibiotic overused. Only half of mothers (50.5%) in our study knew that overuse of antibiotics increased the risk of antibiotic resistance.

#### **4.3. Mother practice of antibiotic use**

In order to limit the misuse of antibiotics, it is important to have a good knowledge of antibiotic practice. Especially using antibiotics prescribed by a doctor. However,

the research results indicated that mothers' practice of using antibiotics was very deficient.

Although the percentage of mothers knowing that they need to use prescription antibiotics was quite high, 94.8% of mothers incorrectly answered in buying antibiotics as suggested by the drug sellers. Over-trust in pharmacists and a lack of understanding of antibiotics had created huge holes in antibiotic use. This leads to mothers using the drug without a doctor's prescription. As high as 86% of respondents have ever bought antibiotics directly at the pharmacy under the consultation of the seller [8]. In Chu Thi Dao's study, 51.7% of mothers wanted to give their children antibiotics as suggested by the pharmacist [4].

Stockpiling of antibiotics for prevention not only increased the use of antibiotics without doctor's prescription, but also resulted wastage of antibiotics. This was the cause of antibiotic resistance when the storekeeper did not know how to handle expired antibiotics. However, stockpiling of antibiotics and the use of remaining antibiotics were common in many parts of the world. Only 35.1% of participants never stored antibiotics [3], 32% of those who gave their children antibiotics without advice admitted using the remained antibiotics for treatment [6]. 38.7% of mothers wanted and 24.2% of mothers gave their children antibiotics for the rest of the previous period [4]. The study results reached up to 40.2% of mothers with wrong practice in this issue. The mistake significantly contributed to the proliferation of antibiotic-resistant bacteria.

A serious mistake was when 85.6% of mothers were willing to share antibiotics with their relatives and 52.6% of mothers had used antibiotics as suggested by their relatives or neighbors. The WHO survey

results indicated the knowledge gap in many countries, especially in lower income countries [7]. Health education is needed to improve the knowledge gap.

Proper use of antibiotics does not just stop at using the correct antibiotics. Preventing diseases in children, especially diseases that are acquired in the community, keeping healthy children will help children limit their exposure to antibiotics, in which adequate vaccination on time and hand hygiene are effective measures. However, the reserch result indicated that there were 52.6% of mothers who knew the benefits and regularly sanitize their hands. This was a low practice rate of mothers in child care. 68% of mothers would not ask their pediatrician to prescribe more antibiotics, showing trust in their doctor. This was a favorable result for doctors to advise and prescribe antibiotics. However, 32% of mothers still needed to be equipped with more knowledge, because this lack of knowledge not only made mothers use antibiotics inappropriately but also created pressure and made doctors prescribe unnecessary and increase antibiotic overusing.

## 5. CONCLUSION

Knowledge and practice of antibiotic use of mothers of children under 5 years old with acute respiratory infections at Dong Hung General Hospital, Thai Binh province, by 2020 was limited. The proportion of mothers with knowledge of using antibiotics was 34%, the average score of mothers with antibiotic use knowledge was  $7.85 \pm 4.05$  out of a total score of 18. Proportion of mothers who practiced antibiotic use. Antibiotic use was 43.3%, the mothers' average score of antibiotic use was  $6.3 \pm 2.09$  out of a total score of 12. The research results suggested that the health care providers should plan and provide educational interventions to

improve knowledge of antibiotics use to help mothers acquire knowledge and practice in the appropriate use of antibiotics, helping to limit and prevent antibiotic resistance.

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