

**A STUDY ON THE PREVALENCE AND PATTERN OF  
SELF-MEDICATION PRACTICES IN CHILDREN IN  
DHAKA**

*A Project Report to be submitted in the Department of Pharmacy for the Partial  
Fulfillment of the Degree of Bachelor of Pharmacy*

**Submitted By**

**Tasnim Akter**

**2012-1-70-017**



**Department of pharmacy**

**East West University**

## **DECLARATION BY THE RESEARCH CANDIDATE**

I, Tasnim Akter, ID: 2012-1-70-017, hereby declare that the dissertation entitled “**A Study on the Prevalence and Pattern of Self-Medication in Children Practices in Children in Dhaka**” submitted to the Department of Pharmacy, East West University, in the partial fulfillment of the requirement for the degree of Bachelor of Pharmacy (Honors) is a genuine & authentic research work carried out by me. The contents of this dissertation, in full or in parts, have not been submitted to any other institute or University.

-----

**Tasnim Akter**

ID: 2012-1-70-017

Department of Pharmacy

East West University

Dhaka, Bangladesh

## **CERTIFICATION BY THE SUPERVISOR**

This is to certify that the dissertation, entitled “**A Study on the Prevalence and Pattern of Self-Medication Practices in Children In Dhaka**” is a bona fide research work done by Tasnim Akter (ID: 2012-1-70-017), in partial fulfillment of the requirement for the degree of Bachelor of Pharmacy under my supervision.

-----

**Farah Shahjin**

Senior Lecturer & Supervisor

Department of Pharmacy

East West University

Aftabnagar, Dhaka

## **ENDORSEMENT BY THE CHAIRPERSON**

This is to certify that the dissertation, entitled “**A Study on the Prevalence and Pattern of Self-Medication Practices in Children In Dhaka** ” is a bona fide research work done by Tasnim Akter (ID: 2012-1-70-017), under the guidance of **Farah Shahjin**, Senior Lecturer, in partial fulfillment of the requirement for the degree of Bachelor of Pharmacy.

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**Dr. Shamsun Nahar Khan**

Chairperson & Associate Professor

Department of Pharmacy

East West University

Aftabnagar, Dhaka

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## **DEDICATION**

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## **List of Abbreviations**

ADR- Adverse Drug Reaction

ARI- Acute Respiratory Infection

CAM- Complementary and Alternative Medicines

CQ- Chloroquine

DNA- Deoxyribonucleic Acid

FDA- Food and Drug Administration

GABA-Gamma Aminobutyric Acid

GM-CSF - Granulocyte-Macrophage Colony Stimulating Factor

GP- General Practitioner

ICAM-1- Intercellular Adhesion Molecule-1

LE- Less than or equal

MUR- Medicines Use Review

NAFDAC- National Agency for Food and Drug Agency and Control

NONRX-CVHs- Nonprescription Medications a Perceived Cardiovascular Health Purpose

NSAID- Non-Steroidal Anti-Inflammatory Drugs

OTC- Over the Counter

PNG- Papua New Guinea

RSV- Respiratory Syncytial virus

SMA- Self-Medication with Antibiotic

SPSS- Statistical Package for the Social Sciences

SSRI- Selective Serotonin Re-uptake Inhibitors

STAT- Signal transducer and activator of transcription 1

UK- United Kingdom

US- United States

UTI- Urinary Tract Infection

VS- Versus

WSMI- World Self -Medication Industry

## Abstract

Self medication became a common trend in South-Asian sub continent and now it is becoming a potential threat for the Bangladesh health sector. From the survey it was estimated the prevalence and pattern of the self medication practices in Dhaka. The study was performed to determine the perception, extent, reasons and sources of self medication practices among the children. Self medication is a threat for our country especially for the children. Parents of these children are taking medicines from dispensaries without knowing anything about the drugs. Sometimes they do not examine the disease in a proper way thinking the fever a normal issue. The research was conducted among 503 parents of children from different places of Dhaka city. From the result of this research, it was determined that the many parents (62.22%) self medicated their children and maximum children were (50.50%) in 1yr to 5yr range. With fever (46.92%) different kind of disease like common cold (29.82%), gastrointestinal (14.71%) being the disease mostly affected the children. They are also suffering from respiratory problem (9.54%) and dermatological problem (5.96%). In addition to these they suffered from eye problem, typhoid, pain in throat. Most of the cases paracetamol (54.63%) was self medicated by the parents. Desloratadine/ fexofenadine (23.64%), oral saline (10.22%), sulbutamol (6.71%) also be taken by them as self medicated to their child. Sometimes they went the homeopathy doctors also. From the research it can be mentioned that parents do not know much about the self medication and antibiotic, other drugs they used can be resistance. They have no knowledge about the resistance problem of antibiotics. Only a small number of parents know about all those of things. In our country dispensaries are the main sources of medicines. They should not be sold the medicines without physician's prescription. To obtain the whole picture of the aforementioned crisis in Bangladesh, further studies are required.

**Key Words:** *Dhaka City, Self medication, Dispensaries, Medicine, Practice, Physicians, Gastrointestinal*

# CHAPTER ONE INTRODUCTION



# Introduction

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Children constitute a large percent of the population in developing countries. Children drug utilization is of great concern globally and has received a lot of attention. Many studies have been conducted in this field in the developed and developing countries, and have all shown various problems ranging from misuse and abuse of prescribed drugs. Most drugs in children are used outside the health settings with or without prescription. The initial response to various illnesses in their children among many families has been found to be self-medication (Eldalo, Yousif and El-Hadiyah, 2013).

## 1.1 What is Self- Medication

Self-Medication involves the utilization of medicinal products by the consumer to treat self recognized disorders or symptoms or continued use of a medication prescribed by physician for chronic or recurring diseases or symptoms. It also includes use of the medication of family member, in case of the treatment of children or the elderly is involved (Apsmi.net, 2015).

Self-medication has traditionally been defined as “the taking of drugs, herbs or home remedies on one's own initiative, or on the advice of another person, without consulting a doctor (Harnandez and Job 2001).

It is a broad concept encompassing

- Hygiene (general and personal)
- Nutrition (type and quality of food eaten)
- Lifestyle (activities, leisures)
- Environmental factors (living conditions, socio habits)
- Socioeconomic factors (income level, cultural beliefs) (Belachew *et al.*, 2011).

Self-medication is included under self-care and is a form of patients’ contribution to health related decisions (Mansouri *et al.*, 2015).

Self-care is what people do for themselves to establish and maintain health, prevent and deal with illness and Self-medication is the selection and utilization of medicines by individuals to treat self- recognized or identified illnesses or symptoms (Apps.who.int. 2015).

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In 1998, a special working group of the World Health Organization (WHO) offered an inclusive definition of “Self Care”:

“‘Self Care’ in health refers to the activities individuals, families and communities undertake with the intention of enhancing health, preventing disease, limiting illness, and restoring health. These activities are derived from knowledge and skills from the pool of both professional and lay experience. They are undertaken by lay people on their own behalf, either separately or in participative collaboration with professionals”(Asmi.com.au, 2015).

Self-medication is one element of self care (Apps.who.int. 2015).

Self-medication is the use of medicines which is designed and labeled without medical supervision and approved as safe and effective for such use in the treatment of common health problems. Medicines for self-medication are also known as 'nonprescription' or 'over the counter' (OTC) and are available without a doctor's prescription through pharmacies. In some countries OTC products are also available in supermarkets and other outlets. Medicines that cannot get without a doctor's prescription are called prescription products (Rx products) (Jain *et al.*, 2012).

Self-medication with OTC medicines is sometimes referred to as ‘responsible’ self-medication to distinguish this from the practice of purchasing and using a prescription medicine without a doctor’s prescription. This is irresponsible (and potentially even dangerous) ‘self-prescription’, and has no place in self-care or (responsible) self-medication. Self-medication is an age old practice. Urge of self care, feeling of sympathy towards family members in sickness, lack of health services, poverty, ignorance, misbelieves, extensive advertisement and availability of drugs in other than drug shops are responsible for growing trend of self-medication (T.K *et al.*, 2011).

In 1995 the WHO Expert Committee on National Drug policies stated: “Self-medications is widely practiced in both developed and developing countries. Medications may be approved as being safe for self-medication by the national drug regulatory authority. Such medicines are normally used for the prevention or treatment of minor ailments or symptoms, which do not justify medical consultation. In some chronic or recurring illnesses, after initial diagnosis and

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prescription, self-medication is possible with the doctor retaining an advisory role” (Jain *et al.*, 2012).

In developing countries like ours self medication in children is a point of concern in now a day. Self-medication with over-the-counter (OTC) drugs like paracetamol (PCM), NAPA among children and adolescents is increasing and contributes an important public health issue internationally. But the reasons behind this development are unclear; parental influence is suggested. But latter it was shown that maternal health did not motivated child use of OTC analgesics (Jensen *et al.*, 2014).

Symptoms like fever, headache, cough, dehydration, respiratory syndromes are common in Bangladesh among the children. The use of medicines whether is it self- medicated or consulted with doctor in the treatment of these symptoms may depend on many factors. In many countries, the antipyretic drugs and other over-the-counter (OTC) medicines are commonly used among parents to treat their children (Eldalo, Yousif and El-Hadiyah, 2013).

In few non-systematic studied shows that the prevalence of self medication in Brazilian children, which found results from 7.1 to 53.2% for different age groups (Journal of post secondary and Disability, 2015).

Despite the widespread use of self-medication among the child population and the potential harm it can do, up-to-date epidemiological data on self-medication are sparse worldwide.

If the most paediatric OTC drugs such as vitamin supplements and dermatological preparations used properly i.e. according to the package insert then it is safe. Nevertheless, parents and adolescents may have insufficient knowledge about the medicines they use, which can cause inappropriate drug use sometimes it can be serious, adverse drug effects among self-medicating children and adolescent (Du and Knopf, 2009).

But Major problems related to self-medication are wastage of resources, increased resistance of pathogens and causes serious health hazards such as adverse reaction and prolonged suffering. Antimicrobial resistance is a current problem world-wide particularly in developing countries where antibiotics are available without any prescription. It is alarming that the prevalence rate is

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on the rise despite efforts to limit these problems. Various studies shows that self medication practices are more common to the people who have a lower socio economic status, have minor ailments. Self- medication is a common practice in developing countries as it provides a low cost of alternatives for people who cannot afford the high cost of clinical service and also as many drugs are dispensed over the counter without prescription from a register medical practitioner and prior experience of treating same illness. Now it is a great concern for us the prevalence of self medication in children in Bangladesh (Bennadi, 2014).

### **1.2 Historical perspective of self medication**

The neotropical ecologist Daniel Janzen proposed that self mediation may exist in primates, and other animals was. He asserted that animals using plants for parasite infection and other ailments. The first example of self medication in chimpanzees is a behavior called leaf swallowing. Chimpanzees swallowing *aspilia* leaves might be similar to human drinking coffee. It is natural habit of people whenever they feel sick, they try to do something or take something for themselves. In the very earliest time in any culture anywhere in the world there is a evidence of using or doing whatever the injured people thought appropriate for them to relieve from distress or sickness (Chuenchy, 2007).

Throughout human history the dominant paradigm of healthcare was individual self-care in the family and local community. Treatment involved self-treatment with locally-produced preparations which efficacy was generally uncertain or unknown. In the 1970s and 1980s the conditions generally considered as suitable for people to treat themselves without the intervention of a doctor were quite limited. They included mild to moderate pain, coughs and colds, constipation and minor skin problems such as cuts and bruises, for which a limited range of medicines were available for self-medication. A new era of access to modern, effective medicines was heralded in the early 1980s, when medicines which had previously only been available on prescription began to be switched to nonprescription status. Among the first products switched to nonprescription status was ibuprofen for the treatment of pain, in the UK

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(1983) and the US (1984). In Canada, hydrocortisone became available without a prescription in 1986(World Self Medication Industry, 2006).

In 1972, the FDA initiated a review of nonprescription drugs that for the first time spotlighted and validated the critical presence of nonprescription drugs in the consumer market place. Herbal and other plant-derived remedies have been estimated by the World Health Organization (WHO) to be the most frequently used therapies worldwide. In 1991, herbal products were sold of approximately \$1 billion, although precise levels of use of these remedies in the United States were unknown. Previous reports about herbal remedies in the rural South have described the use and biologic activities of locally gathered plant species and details of preparation and dosage, but have not determined the prevalence of use of plant-derived remedies in specific disease in the study population (Self-Treatment With Herbal And Other Plant-Derived Remedies — Rural Mississippi, 1995).

Self medication had also been derived from the others sources outside plants. Self medication had also been derived from other sources outside plants. In the southern United States of America, certain foods are used to reduce the excess volume of ‘blood’ which was believed to cause the illnesses, in Latin America, certain foods are used to counteract ‘hot’ or ‘cold’ illness and to restore the body equilibrium in the majority of Xhosa speaking women of South Africa, indigenous healing practices are used for themselves and their babies because of the need to ‘strengthen’ the womb against sorcery, prevent childhood illness and to treat symptoms they perceive biomedical services would not be able to treat (Afolabi, n.d).

### **1.3 Reasons for self medication**

Self medication is very common and a number of reasons could be enumerated for it. These included socioeconomic factors, lifestyle, ready access to drugs, the increased potential to manage certain illnesses through self-care, and greater availability of medicinal products (Belachew *et al.* 2011)

A study on Yemen showed there was a significant difference between the prevalence of self-medication with antibiotics and the sex of the patients. In the present study, the results showed

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that female children were more exposed to self-medication than males. This can be explained by the fact that many families in Yemen prefer male children than females, so they seek medical advice for boys early without trial of antibiotics without prescriptions ((Mohanna, 2010).

Home- and self-treatment is a central part of local medical culture in Kenya societies, where people are used to taking treatment into their own hands. Most common illnesses are dealt with by lay people on their own; only when an illness is prolonged or serious do people seek expert advice, be it a local healer or a biomedical professional (Geisler *et al*, 2001).

The common reported reasons for self-medication were shortages of drugs at health facilities, long waiting time at health facilities, long distance to health facilities, inability to pay for health care charges and the freedom to choose the preferred drugs in Tanzania. The participants preferred self-medication practice due to freedom of choosing the drug of their choice. Some participants said that if they go to the pharmacy/drug shop, they were able to make the decision on which drug to use. Also, they admitted going to the pharmacy/drug shop because they could obtain drugs such as quinine and antihelmintics, which they believed would cure their sick children but these drugs were rarely prescribed from health care facilities (Chipwaza, 2011).

According to a report the reason for self medication, given in male (35.48%) and female (15.56%) used self medication due to the lack of time, 32.26% male and 26.67% female used self medication due to high consultant fee of Physician, 29.03% male and 11.11% female wants quick relief, 3.33 % male and 24.44% female believe in Ayurveda. There are some cases of female (6.67%) in which there is no family support hence they uses self medication, 15.56% female used self medication due to their inability to walk. There are some other reasons like wider availability of medicine, greater choice of treatments, ease of access an active role in his/her own health care and self reliance in preventing or reliving minor symptoms or condition, ailment was minor and financial constraint (Jain *et.al*, 2011).

In a study of WHO self care medication identified patients' reasons for self-medication The commonest was that the illness was regarded as minor (80.2%). More than two-thirds of respondents (70.1%) indicated that they self-medicated because health care facilities were unavailable at times when they needed care. More than half of self-medicated respondents

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(52.0%) reported that they did so because they lacked the time to visit formal health care facilities. More than 40% of self-medicated patients indicated that the cost of consultations with the doctor was a reason for self-medication. Other reasons for self-medication were expectations of less/no benefit from modern health care, remoteness of health care sites and convenience (Alghanim, 2011).

Therefore most common reasons of self medication are found to be: (Jain *et.al*, 2011)

### **Extreme poverty:**

This condition has affected every aspect of living in developing countries including our health, people don't want to go to hospital as they cannot afford to pay for drugs or hospital bills. Thus they prefer to go to chemist or pharmacies to save cost at the expense of their health.

### **Ignorance:**

Many people are unaware that drugs can harm and hence need proper advice from qualified personnel before use, but ignorance of people about the adverse effect of drugs leads to severe problem.

### **Lack of easy excess to some prescribed drugs:**

Sometimes people have to go to long distance to get their prescribed drugs. Therefore they prefer to settle for more easily available alternatives.

### **Quackery:**

There are many unqualified people work as health professional who prescribe drugs willingly who have worsen the case of self medication.

### **Lack of proper enforcement of existing laws:**

On drugs there is procurement in most developing countries.

### **Wrong attitude of people:**

Many people lack proper medical because of their tight schedule or are too busy and thus prefer to engage self medication.

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### **Weak health system:**

Many of health system are weak and lead many people to losing faith in them.

### **Wrong claims by alternative medicine suppliers:**

This is another great problem. Many traditional and alternative medical practitioners are guilty of making money by deceiving people.

### **Religious misconception:**

The proliferation of different religious houses, ideologies now a day has had some negative impacts on health. Some people have some misconceptions that prevent them from seeking proper medical care. Example of these people is who refuse to go to hospital because they have been told they must not take injections or drugs.

There are also some other reasons are which are less common:

### **Urge of self care:**

Due to business or hurry people avoid going to doctors and do self medication. They become too busy to treat themselves as soon as possible with maximum result.

### **Self need to play active role:**

Some people think that what they do or what they use is right. They consider themselves intelligent and avoid going to doctors for advice.

### **Illness to be minor:**

If illness is minor then people especially poor people avoid going to hospital or doctors. They take advice from others and take medicines.

### **Embarrassed of discussing their symptoms:**

People of developing countries as they have less education, women do not go outside often from religious due to cultural or religious reservations feel shame to discuss their internal problem with doctors and often do self medication.



### **Suggestion of friend or relatives:**

Sometimes people take suggestion from friends or relatives who got benefit from medicines and advice others to take the same medicines for disease similar to theirs. This can lead to error in therapeutic outcome (Mumtaz *et al.* 2011).

### **1.4 Medication commonly used in Self Medication**

Some medicines are commonly used to self medicate which has been reported. This included antibiotics, analgesics, vitamins, oral antibiotics, pain relievers, cough remedies, creams, antimicrobials among primary care patients, while for OTC drugs the commonly requested were for nervous system, analgesics, cough or cold medications (KI and DG,1998).

A qualitative survey reported that parents in Mongolia used antibiotics such as chloramphenicol to treat child diarrhea and another study noted that 32–35% of families practiced self-injection at home. The present study suggests that caregivers in Ulaanbaatar commonly use non-prescribed antibiotics for children younger than 5 years of age. Some determinants of this practice were the child's age, caregivers' misconceptions about the efficacy of antibiotics for upper respiratory tract infections, caregivers' own experience with self-medication, and the availability of antibiotics at home (Togoobaatar *et al.*, 2010).

In another survey a random sample (n = 13,295, response rate 79.4%) of the Swedish population aged 16 years and older was interviewed about health, medication use and related matters, among other things. In all, 35% of the population used analgesics at least once during a two-week period, and analgesic use was more than 50% higher among women than men. Analgesic use was less common among those aged 45-64 years and 65-74 years than those 18-44, after controlling for all other variables. The study showed that self-perceived poor health and pain explain much analgesic use. Analgesic use is further explained by lifestyle, sleeping problems, and health care utilization. Marital status, educational level, socioeconomic status, social network and working conditions were found to be of minor importance (Antonov and Isacson, 1996).

In a study of United Arab Emirates prevalence of antibiotic use with and without a prescription was high (40 %). The pharmacy was the main source where the majority (slightly more than

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90%) obtained antibiotics. The course of antibiotic was completed by larger number of respondents with (75.3%) than without (632.5%) prescriptions. Influenza, upper respiratory tract infection, skin conditions, gastrointestinal problems and urinary tract infection were the conditions for which antibiotics were used. The most commonly prescribed antibiotics were amoxicillin (42.1%), amoxicillin-clavulanic acid combination (40.9 %), and penicillin (6.8%). On the other hand, for self-medication respondents, the order was slightly different with amoxicillin-clavulanic acid combination (48.9 %), amoxicillin (27%) and penicillin (10.1%). Similar numbers of respondents obtained prescribed (93.2%) and self-used (92.1 %) antibiotics from pharmacy while the rest used antibiotics stored at home. Surprisingly, large numbers of both groups of students were aware of bacterial resistance associated with misuse of antibiotics (Ibrahim Sharif and Suleiman Sharif, 2013).

Of the 9281 participants, in Jordanian survey among 2133 (23%) were using antibiotics over the study period: 842 (39.5%) of them were self medicating with antibiotics and 1291 had antibiotics prescribed for treatment. The analysis of questionnaire data showed that the main source of antibiotic supply were the previously prescribed antibiotics stored in the household (392) or purchased at retail pharmacies (370). Supplies by friends and relatives accounted for about 68 cases (Al-Azzamet *al.*, 2007).

**Table: 1.1: List of drugs used for self-medication** (Bennadi, 2014)

Category	Drugs
Cough and cold	D-cold total, corex, benadryl glycodin
Analgesics	Saridon,disprin,diclofenac,nimesuide
Antipyretics	Calpol, crocin
Antiseptics	Detol,boroplus
Antibiotics	Ciprofloxacin,norfloxacin,amoxicillin,cefadroxil
Others	Dabur chawanprush

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Analysis in 2005 shows that 10% of participants (n=315) self-reported taking one or more nonprescription medications in the past 2 weeks for a perceived cardiovascular health purpose. Among these individuals, prevalence of use of vitamin/mineral supplements, non vitamin/non mineral supplements, and over-the-counter products for a cardiovascular purpose was 37.5%, 21.3%, and 54.6%, respectively. Popular perceived cardiovascular health (NONRX-CVHs) was aspirin (52.1%), vitamin E (24.4%), garlic(9.8%), and omega-3/fish oils/fatty acids (3.8%). NONRX-CVH users were older than general nonprescription users ( $p < 0.001$ ). Of 613 people using a prescription drug for cardiovascular reasons, 135 (22%) reported using one or more NONRX-CVH medications (MB *et al.*, 2006).

Aspirin, acetaminophen and caffeine were the most frequently abused among chronic headache sufferers. Orthodox medications were preferred to traditional African medicines for most common symptoms. However, some studies in developing countries revealed that people prefer traditional African medicines for diarrhea, vomiting, cough and cold, rheumatic and neurological complaint. Among Hong Kong Chinese, Chinese tonic was the most frequently used traditional medicine for self medication which was perceived as equally effective as western medicine. The most commonly used supplement among Americans were minerals, multivitamins, vitamin C, calcium, vitamin E and A while the remaining percentage were for herbal products, mega dose vitamins, protein and amino acid preparation (Afolabi *et al.*, 2011).

Among market women surveyed in a sub-urban community in Nigeria, antipyretic analgesics, haematinics/vitamins, antibiotics, antimalarials and alternative or traditional medicines respectively were commonly consumed. In an European study of those presenting with acute illness, the most commonly used medications were analgesics and antipyretics and among paediatric presentations were antipyretics, analgesics, antitussives and antibiotics. In a community-based pharmacy study in Portugal, the main therapeutic groups used for self medications were in the order: throat, cough, cold, stomatological, laxative, analgesics and dermatological products respectively antibiotics and antimalarials for illness management and analgesics and antibiotics in dental outpatients from recent Nigerian studies; analgesics, cough, cold remedies, antiallergies, vitamin and energy tonic were the commonest OTC used as revealed from a recent review of self medication in India (Bennadi, 2014).

### 1.5 Sources of information for self medication

In developing countries which are economically deprived countries most episodes of illness are treated by self medication. Whether one lives in a developing country or in a developed one, the sources of information are similar. A person may seek advice from ‘an older person in your household who possesses the knowledge of simple herbal remedies for common illnesses’ or with a pharmacist because they can ‘provide a good help to assess the symptoms’ and ‘spend time explaining how to use the medication properly’ Or one may purchase an OTC medicine ‘based on a previous medical recommendation’, A study shows that the commonest source of information was the private sector pharmacy salesmen (including pharmacists), reported by about three-quarters of respondents (74.0%). This was followed by respondents’ experiences or knowledge from previous episodes (50.8%). Health staff was the least common source of information, reported by only 9.6% of respondents. Other sources of information about medications were relatives/friends, the Internet and advertisements (SA, 2011).

In a study of rural area of Barabanki showed that the important sources of information for self-medication were previous prescription of doctors (72.6%), friends and neighbors (52.4%) and chemists (38.1%) In present study, most common reasons for favoring self-medication were time saving (45.2%) followed by high cost of consultation (42.3%), minor illness (39.9%) followed by convenience (25.0%) (Keshar, Kesarwan and Mishra, 2014).

The common sources of drugs in self- medication: (Bennadi, 2014)

- previous prescription
- Traditional sources
- Advertisements
- Family doctors
- Magazines
- Pharmacists
- Local hawkers
- Native helpers
- Internet
- Chemist shop
- Books.
- Leaflets along with OTC drugs
- Friends

### **1.6 Advantages of self medication**

Self medication has been successfully integrated into many health care systems throughout the world. It is widely accepted that self-medication has an important role to play in health care and, with the continued improvement in people's education, general knowledge and socio-economic status, self-medication has been successfully integrated into many health care systems throughout the world (Apps.who.int, 2000).

Self medication is not necessarily something to be frowned upon, but it is something that one needs to be cautious about. Most health care professionals also avoid treating themselves and when faced with any illness will seek medical attention. Self medication does offer tremendous benefits, particularly when faced with non-threatening infections like the common cold or mild backaches and so on. In such scenarios self medication is beneficial as it gives you a greater role in your own health care. Keep in mind that self-medication does not mean that you should rely on drugs and strong medication but instead you can use home remedies and natural treatment methods to get rid of a minor but persistent problem. This also reduces your dependence on health care professionals, whose skills and expertise are indispensable in the treatment of more serious health conditions. This also reduces health care costs for the government.

Some drugs in the UK and USA which have been deregulated in the past decade from prescription-only category to availability without prescription. The deregulation process has been championed by the pharmaceutical industry, the pharmacy profession and government health policy maker and is supported by the acceptance that patients wish to have a greater role in their own treatment (Hughes, McElroy and Fleming, 2001).

In developed countries, self medication has also been used very widely to combat behavioral and psychological problems such as smoking. According to the 2009 World Self Medication Industry (WSMI) statistics nicotine replacement therapy in the United States, the first year after its switch to non-prescription status, yielded an estimated 114000 to 304000 new former smokers annually. That is up to 300000 people each year who are able to reduce their risk of lung cancer, emphysema, stroke, heart attack and complications in pregnancy because of self-care products that help them stop (Academia.edu, 2009).

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Self medication also has advantages for healthcare systems as it facilitates better use of clinical skills, increases access to medication and may contribute to reducing prescribed drug costs associated with publicly funded health programmes. Expected health benefit from self medication depends on perceived effectiveness of self medication. In a world of scarce government and in many countries scarce individual resources, responsible self-medication should be a cornerstone of healthcare provision and health policy (Hughes, McElnay and Fleming, 2001).

Responsible self medication may include:

1. Help to prevent and treat symptoms and ailments that do not require a doctor.
2. Self-administration helps patients to learn and understand about their medication regimes, which may lead to better compliance
3. Increase the availability of health care to populations living in rural or remote areas.
4. Enable patients to control their own chronic conditions.
5. Cost effective
6. Education opportunities on specific health issues (i.e. stop smoking aids and products to treat heartburn)
7. Convenience
8. Patients are able to take their medications in accordance with their usual routines thereby reducing the potential for harm with, for example incorrectly timing insulin administration. This is especially important with medications such as those to treat Parkinson's disease where patients have very specific dose timing schedules to optimise symptom control.

These benefits translate into patient and consumer wellness and productivity, economic gain for employers, and cost savings to healthcare budgets through reduced medicine budget cost and reduced physician visits. These conditions aim at ensuring the safety of taking self medicated drugs (Jain *et.al*, 2011).

Good self-medication can also provide benefits in community level such as:

- Saving scarce medical resources from being wasted on minor conditions
- Lowering the costs of community funded health care programs
- Reducing absenteeism from work due to minor symptoms
- Reduce the pressure on medical services where health care personnel are insufficient

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- Increase the availability of health care to populations living in rural or remote area (Bennadi, 2014).

Infections are illnesses which usually present acutely. Patients may therefore benefit specifically from the greater immediacy and convenience of access to antibacterials (as discussed above). This could potentially shorten the period of illness, reducing both the length of symptoms and the period of infectivity. The OTC availability of treatment for vaginal candidiasis and herpes labialis probably shortens the delay between onset of symptoms and start of effective treatment (Reeves *et al.*, 1999).

Society benefits from a citizenry that is better informed about healthcare and therefore more able to exercise self-reliance. Having the tools available to help consumers practice such self-reliance also allows scarce health resources to be directed toward illnesses or conditions that require treatment in the professional healthcare system. Having appropriate nonprescription medicines available can also reduce illegal use of prescription products without a prescription – something which occurs too frequently in some countries, and is sometimes referred to as “self-prescription.” In Mexico, for example, an increase in the availability of nonprescription medicines helped to reduce the estimated rate of “self-prescription” by 20 percent from 1989 to 1999 (Wsmi.org, 2014).

### **1.7 Disadvantages of self-medication**

Despite the significant benefits of self medication there are some inherent risks as well. The irresponsible use of over the counter medications can be particularly damaging and this is in fact the biggest risk. The risks of self medication go beyond simple over reliance on drugs and remedies. When individuals with no knowledge or limited knowledge of medicine and health care attempt self treatment, it typically also involves self diagnosis (Home-remedies-for-you.com, 2014).

Modern medicine have become absorbed rapidly in to the local custom throughout the world, their ubiquitous distribution, powerful marketing and poor control mean that they are used and misused for a wide range of applications. Misuse is defined as using an over the counter drug

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product for a legitimate medical reason but in higher doses or for a longer period than recommended. For example long term uses of some drugs have been associated with chronic renal failure. Many earlier reports implicated phenacetin-containing analgesics as the risk factor. Since the early 1980s, several case-control studies have reported associations between chronic renal failure and use of other forms of analgesics, including paracetamol, aspirin, and other nonsteroidal anti-inflammatory drugs (NSAIDs) (Bennadi, 2014).

There are several critical issues involved before deciding if drugs should be authorized for self-medication. First and foremost, is the principle that no drug is absolutely safe - prescription drugs remain potent medication. In many countries, the possibility of reporting adverse drug reactions (ADR) to self-medication products is not available since many conventional ADR reporting schemes operate through health care professionals. Only in a small number of countries with highly developed ADR systems are patients and consumers able to report ADRs directly to the authorities or through pharmacies. Moreover, clinical trial data for prescription use may not necessarily be valid for self-medication. This situation is beginning to improve within some countries that now demand OTC-environment studies to be undertaken before registration (Apps.who.int, 2000).

In many countries, vaginal antifungal drugs have been released on over-the-counter (OTC) markets, yet little is known about women's management of their symptoms. In a study in this case, Physicians had observed several disadvantages of self-treatment, with unnecessary use and use for the wrong indications being the most often reported. In all, 31% of gynaecologists and 16% of GPs reported that these adverse events had been clinically significant, with delay in the treatment of other infections being the most common problem (Sihvo *et al.*, 2000).

Using pharmaceutical drugs to treat depression without the advice of a doctor might seem like a slightly safer route to go down, but it can still very much cause problems. Some antidepressants such as forms of GABA are available over the counter or online and these can have mood enhancing effects. GABA for instance is a form of SSRI (selective serotonin re-uptake inhibitor) which essentially results in their being more free serotonin in the brain by preventing it from being reduced (it literally blocks the re-uptake). This results in a better mood because serotonin is one of the 'happiness hormones' that results in elevated mood. However this on its own can



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cause side effects. For instance it can result in the brain reacting by producing less serotonin in future and thereby lowering mood the rest of the time. Then the same dose of GABA will cause the brain only to return to normal levels of serotonin, and one would have to up the dosage to get the same improved mood (Sharif, Bugaighis and Sharif, 2015).

The risks from irresponsible use of self medication are also worrying because of their implications on our health not just as individuals, but as a species as well. Our over reliance and almost abusive dependence on antibiotics for various conditions for example, has created a variety of drug resistant strains of bacteria. This poses a greater health risk than most of us can even fathom, as a global pandemic resulting from a drug resistant bacteria strain could prove disastrous (Home-remedies-for-you.com, 2015).

It is acknowledged that microbiological diagnostic tests will not be available to self-medicating patients, unlike to GPs. However, it is also known that few GPs take specimens from patients for whom they prescribe antibacterial. For example, in managing acute UTI it is common practice to treat empirically without taking a specimen. Misdiagnoses could have several adverse consequences. These include:

- (i) The partial or complete failure to treat an infection (such as therapy for presumptive urinary tract infection (UTI) when the patient has a sexually transmitted disease)
- (ii) The failure accurately to identify or treat the presenting infection (such as otitis media complicated by meningitis)
- (iii) Exposure to the risks of antibacterial without benefit when no treatable bacterial infection is present
- (iv) Increases possibility in the number of patients receiving antimicrobials with consequent increase in the ecological pressure for resistance.
- (v) Failure to recognize that an infection might be a manifestation of underlying disease (e.g. sepsis in diabetes mellitus) (Reeves *et al.*, 1999). Finally, according to the World Self Medication Industry (WSMI) while self-care through responsible self medication can play an important role

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in the prevention of chronic diseases. The unfortunate feature of self-medication in a good number of developing countries where good healthcare systems are absent or weak is self-prescription. Self-prescription, according to studies in parts of Asia and the American continent is a leading cause of antibiotic resistance, and this is similar to the findings in certain parts of Nigeria (Togoobaatar *et al.*, 2010).

It is hard to strike a balance between self-medication that is necessary and the irresponsible use of medications and home remedies. Setting yourself strict deadlines can help address this problem to a great extent however. In other words, if you find that the ailment in focus does not respond to treatment within a deadline, you should seek immediate medical attention. The length of the deadline would naturally vary, depending on the severity of the symptoms or the severity of the condition they could be symptomatic of (Home-remedies-for-you.com, 2015).

### **1.8 Significance of self medication**

Self-medication is becoming an increasingly important area within healthcare. It moves patients towards greater independence in making decisions about management of minor illnesses, thereby promoting empowerment (Hughes, McElnay and Fleming, 2011).

Self-medication makes consumers more health conscious, reduces treatment burden on healthcare facilities and curtails the cost and time of obtaining access to treatment. However, it increases risks such as drug resistance, adverse drug reactions, incorrect diagnosis, drug interactions and polypharmacy (Eticha and Mesfin, 2014).

A survey conducted for first-year medical students of the Arabian Gulf University, Bahrain (including some Saudi students) suggested that these students had a poor knowledge about adequate self-medication whereas the knowledge of medication usefulness and harms was adequate. The attitude towards self-medication was positive and although the practice of self-medication was common, it was in most cases inadequate (sharma and sharma, 2015).

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Consumers are willing and able to take more responsibility for their own health and by so doing a significant amount of resources could be utilized in more pressing areas than patients receiving consultation and prescription for minor ailments. Consumer behavior research has shown that people want to take responsible self-medication, know what illness they could treat themselves use medicine with caution and when to seek professional help (Tejashree and Sarala, 2014).

In some cases, the practice is frequently and successfully used. An Australian-based study revealed that in only 2% of cases self treatment for minor ailments were the actions taken assessed as inappropriate and potentially harmful. This agrees with a later study which showed that few, if any were consuming nutrient supplements in amount considered toxic and that most consumers used self medication preparations in a safe and proper way. This agrees with other studies. Hence, in some patients, self medication was recommended if they continue to have recurrences of a chronic infective process. Further, because OTC drug sales statistics reflects pattern of self medication, it may be used to monitor the practice (Afolabi *et al.*, 2011).

The increase in self-care is due to a number of factors. These factors include:

### **Socioeconomic factors**

Growing empowerment, resulting from improved educational levels and greater access to information, combined with increased individual interest in personal health, is resulting in growing demand for direct participation in health care decisions.(International Pharmaceutical federation,1996).

### **Lifestyle**

Awareness has increased of the impact of certain lifestyle factors -such as avoidance of smoking and keeping to a well-balanced diet -on maintaining health and preventing illness.

### **Accessibility**

Consumers prefer the convenience of readily available of medicinal products to long waiting times at clinics or at other health facilities. In many countries, however, such availability may mean paying higher prices.

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### **Management of acute, chronic and recurrent illnesses, and rehabilitation**

It is now recognized that certain medically diagnosed conditions may be appropriately controlled by self-medication or no medication at all. Indeed, in some countries this may be a necessity rather than a choice.

### **Public health and environmental factors**

Good hygiene practices and appropriate nutrition, safe water and sanitation have contributed to the capacity of individuals to establish and maintain their health, and prevent illness.

### **Demographic and epidemiological factors**

Demographic transition towards a more elderly population is requiring changes in health policy and delivery. Likewise, epidemiological factors arising from changing disease patterns are necessitating adaptation of primary health care provision and funding. These changes and adaptations include enabling individuals to assume greater responsibility for their health care needs. This in turn means increasing individuals' capacity for self-care. (Al-Khaja *et.al*, 2006).

### **Health sector reforms**

In the midst of declining economic activity and resources, governments and other third-party payers and individuals worldwide are grappling with escalating health care costs. Many countries are establishing mechanisms whereby these costs can be contained and health care made more cost-effective. Worldwide, self-medication is being promoted as a means of reducing the health care burden on the public budget. Structural changes including increased reliance on private sector delivery are also increasingly being put in place.

### **Availability of new products**

New, more effective products, which are considered suitable for self-medication, have recently been developed. In addition, many long-established products with a good safety profile have been rescheduled as over-the-counter products; for example: topical and oral imidazoles for vaginal candidiasis, topical fluorinated steroids for hay fever; acyclovir for cold sores; H<sub>2</sub>blockers for prevention of heartburn; H<sub>1</sub> agonists for asthma. In other words, they will be available without prescription (Islam *et.al*, 2007).

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In a study of self medication in India most of the respondents (39.2%) received the knowledge about the medicines for self medication from their pharmacist or druggist. This finding was in accordance with the results of the study conducted in Bangladesh by Islam MS. in which majority (77%) of the respondents sought advice from chemist or druggist to take medicines for minor ailments. A total of 24.7% of the respondents used doctor's prescription for prior illness as a source of information for self medication for similar ailment (Ritu *et al.*, 2011).

In a study of a cross sectional health survey conducted in the Rajshahi city male (83.57%) tended to use more antibiotics than female which is concordance with the study conducted previously in Bangladesh but contrast in the study conducted in Lithuania .The high prevalence of self-medication was found within the adult participants (56.48%) which have correlation with the study conducted in Bangladesh and Arab Emirates (Biswas *et al.*, 2014).

The present study in Mymensingh, Bangladesh highlights the problem of self-medication with antibiotics as OTC (Over the Counter) at Mymensingh Sadar Area. Both developed and developing countries, self-medication with antibiotics is common for illnesses (Begum *et al.*, 2013).

Among the nonmedical students, several cases were found where drugs were being self-medicated in wrong indications, for example, use of flupentixol–melitracen and domperidone to treat headache. The nonmedical students chose the fast acting drugs having the strongest effects for self-medication. The antipsychotics should have prescription-only status in Bangladesh. Mandatory counseling of each customer purchasing drugs from retail drug stores should be introduced (Chowdhury, Aysha and Haque, 2012).

The widespread and inappropriate use of antibiotics has resulted in the development of a progressively antibiotic-resistant microbial ecosystem in Bangladesh. A study among children from a rural community showed that 50% children had enteric flora resistant to ampicillin, cotrimoxazole and streptomycin throughout the year. One important finding is that a medical practitioner can prescribe any drug used for the common cold to cancer. Moreover, polypharmacy is very common among the rural medical practitioners with antibiotics and vitamins prescribed widely. The prescription procedure of antibiotics in Bangladesh is less than ideal as prior identification of the pathogens and its sensitivity to the drug is rarely determined

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before the drug is prescribed. Currently, drug companies are the only organizations in Bangladesh. To provide information to health personnel and it is often not appropriate information. The excessive and inappropriate use of antibiotics adds an unnecessary economic burden to healthcare system and coincides with an increase in drug-resistant organisms, which has resulted in the use of more expensive and toxic drug (Faiz and Basher, 2011).

There was a positive correlation between the education level of the respondents and the tendency to obtain medications from the hospital/pharmacies in the study of Nigerian population. The prevalence among the illiterates was 7.5%, primary-30.6%, secondary-42.2% and postsecondary education-62.5%. In contrast, there was a negative correlation between the education level of the respondents and the tendency to obtain medications from patent medicine stores and local hawkers. For patent medicine stores, the prevalence was 75.0% of the illiterates, 53.1% of the primary, 46.7% of the secondary and 33.3% of the respondents with post secondary education. For those who obtained their medications from the local hawkers, the prevalence was 17.5% of the illiterates, 16.3% of the primary, 11.1% of the secondary and 4.2% of the post secondary educational level respondents. The association was statically significant (Afolabi, 2008).

It is high time to raise voice against self medication and discourage self medication. So the students, illiterate and mass people do not practice self medication. Several studies will help to get more knowledge about the self medication behavior among people. The study can draw attention to our health authority and hope they will take right steps against self medication practices among Bangladesh.

### **1.9 Self -Medication by Adults**

Individuals sometimes self administer medications through drug identification. Trade names were common means of identification and less frequently by generic name, action, color, shape and common usage names. A cross-sectional study was conducted to determine the extent and pattern of self medication among adults, to identify their knowledge and practice concerning the purchased drugs and to calculate prescribing and purchaser care indicators. Following WHO methods, 35 pharmacies were randomly selected from districts in Alexandria city, Egypt. Of 1294 clients interviewed at these pharmacies, 1050 (81.1%) purchased self-medication; the

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commonest reason given was a belief that the condition was minor. The most frequently dispensed drugs were those for the respiratory system. The mean number of drugs per encounter was 1.10, mean cost LE 7.29 and mean dispensing time 2.53 minutes. Purchasers' knowledge and practice regarding the purchased drugs were poor (Sallam *et al.*, 2009).

Any response to illness depends on the ability of patient or caregiver to recognize correctly that a problem, in the form of signs and symptoms, is occurring and to evaluate the seriousness of those indicators once recognized). Culture generally has been shown to influence recognition of illness and choice of care. For example, the designation of acute respiratory infection (ARI) as disease in Uganda necessitates indigenous cures. In the case of diarrhoeal diseases, choice of type of western medicine may be based on the duration of illness. Choice of care depends on what options are actually available. In rural Zambia, for example, most caregivers have access to only one health facility and possibly one or two medicine shop (Afolabi, Brieger and Salako, 2004).

Many older adults independently manage their prescription and nonprescription (OTC) medications. Studies in the U.S. have shown that adults over 65 years are the largest users of prescription and OTC medications, accounting for up to 40% of all nonprescription medication use. Twice as many OTC drugs as prescription drugs were being used by older adults. Older adults are two to seven times more likely to experience an adverse drug reaction (ADR) than younger adults and approximately one third of hospital admissions of older adults are associated with a problem related to prescription medication use. In older adults, the chances of a serious drug reaction are increased because of altered pharmacokinetics, pharmacodynamics, impaired renal function, reduced hepatic blood flow and liver size, increased body fat, decreased lean body mass, changes in receptor sensitivity, and increased number of medical conditions. So the frequent use of OTC drugs makes older adults even more vulnerable to the risks of concurrent or inappropriate medication consumption (Glaser and Rolita, 2009).

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**Table: 1.2: Disease that commonly adults suffers:** (El-Nim *et.al.*, 2015)

Heart disease	Anemia
Chronic fever	Anxiety Disorders
Respiratory disease	Arthritis(including Osteoarthritis and Rheumatoid Arthritis)
Stroke	Asthma
Alzheimer’s and others dementias	Chronic pain
Poor self perceive health	

The drugs commonly used by adults:

- |  |                   |
|--|-------------------|
| 1. Analgesics  | 7. Anxiolytics    |
| 2. Antibiotics   | 8. Hypnotics      |
| 3. Antihypertensive                                      | 9. Antipsychotics |
| 4. Laxatives followed by Antacids                        | 10. Vitamins      |
| 5. Sedatives   |                   |
| 6. Cardiovascular medicine (El-Nim <i>et.al.</i> , 2015) |                   |

**Table: 1.3: Factors Influencing Adults to do self medication** (El-Nim *et.al.*, 2015)

Lack of care	Lack of access
Lack of knowledge	Weak health systems
High cost of medication	Religious misconception
Extreme poverty	Using alternative medicines

People hold the view that medicine should be used in the event of any sickness or discomfort. In the UK where on the average 50% of health care takes place within the realm of self medication. Self-medication trends in the elderly are certainly prevalent among the urban elderly. Older adult



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with multiple chronic conditions face the complex task of medication management involving multiple medications of varying doses at different times (Biswas *et al.*, 2015).

### **1.10 Self Medication by children**

Parents who self-medicate their children are more likely than adults who medicate themselves to say they do so because the illness isn't serious enough to warrant a visit to the doctor (88% parents of children under 18 versus 78% adults in general parents are also more likely than adults in general to believe that non-prescription medications are just as effective as prescription drugs (Jain *et.al*, 2011).

The consumption of pharmaceuticals can be considered an indirect indicator of the quality of health care services and children and adolescents are strongly susceptible to the irrational use of drugs with and without medical control. In developing countries like Bangladesh due to poverty and insufficient knowledge of parents and children themselves perform irrational use of drugs (Pereira *et al.*, 2007).

Analgesic, antipyretic, non-hormonal anti-inflammatory drugs followed by drugs with action on the respiratory tract and systemic antibiotics played an important role in the self-medication patterns and arise a big concern about the risks that some of these drug classes may produce in this context. The risks of non- hormonal anti-inflammatory drugs consumed by children are well documented. Antibiotics have a potential risk for public health and the widespread of multi resistance of antibiotics (Pfaffenbach, Tourinho and Bucarechi, 2010).

The use of herbal medicines for common childhood illnesses has been reported in Nigeria but its use in the management of colic has not been explored. About 85% of Nigerians are known to use and consult traditional medicine for healthcare, social and psychological benefits because of poverty and disillusionment with conventional medical care. Only a few of the herbal medicines in circulation in Nigeria are registered by the National Agency for Food and Drug Agency and Control (NAFDAC). The importance of traditional medicine in Nigerian healthcare has been recognized by the national government who set up a high profile committee to develop, promote and commercialize traditional medicine products. Efforts have also been made by the

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government to preserve indigenous Nigerian medical knowledge by boosting research into traditional medicine (Oshikoya, Senbanjo and Njokanma, 2009).

Adolescents need to be reared with lot of patience, tact and affection even though maintaining discipline and setting limits on their behavior have their own role. Proper and early education regarding drugs will clear their misconceptions and myths regarding drugs abuse and lower their tendency towards experimenting new drugs on themselves. They will be enlightened about the systemic effects of drugs on body. School health program has not been much developed in India and school curriculum does not cater to the needs of imparting the knowledge of drugs of common use or commonly used drugs of minor ailments to any grade/class of students. Imparting knowledge about drugs will go in a long way to curb the menace of lying stealing, truancy and juvenile delinquency (Saini, 2010).

OTC medicines, among children were a point of interest among researchers particularly in the 1990s. Earlier studies indicate that the improvement of information sources concerning self medication is needed, not only for OTC medicines, but for CAMs as well. Research shows that therapeutic errors do sometimes happen when medicines are administered for children at home usual errors are connected with the dose, such as giving double the dose that has been recommended. Parents were found to feel safe in using CAMs for their child in this study and earlier, and to sometimes use them especially if they are worried about the adverse effects of conventional medicines. In addition, according to a qualitative study, parents that had given CAM to their child had less knowledge about the possible harmful effects of CAM than the non-users of CAM (Sallam *et al.*, 2009).

**Table: 1.4: Factors related to self medication in children** (Moraes *et al.*, 2011)

1. The great availability of products in the current days.
2. Quality of health care
3. Difficult access to health care services in poor countries

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**Table: 1.5: Drugs commonly used by children age from 0-14 years (Moraes *et al.*, 2011)**

Aspirin	Laxatives
Antacid	Local eye and skin treatment
Analgesics	Sulbutamol
Anti histamines	Non-steroidal topical anti-inflammatory agents
Cough suppressant	Vitamins or electrolyte supplements

### 1.11 Dangerous aspect of self-medication

It is very common in developing countries for people to developed distrust in going to doctors for treatment. This is not surprising considering the vast array of treatment which can be found at local facilities. It can vary from excellent to absolutely appalling. Educated people can easily fall into a bad habit in Africa of self prescribing and self treating; this is exacerbated by the ease at which they can get hold of prescription medications over the counter at the pharmacy without a prescription. This is an extremely dangerous practice. A large numbers of people when they fall ill don't consult a physician. They either consult a chemist and obtain medications or consult his friend or neighbor who may be having some medications left over from his previous illness. As people vary greatly in their sensitivity to drugs, and appropriate dose to one can be overdose to another and can lead to toxicity, a drug effective in one may cause allergy in other. While persons self-medicate, they won't consider this biological variability and other dangerous drug interactions .Self-medication becomes harmful when some diseases unknown to the patient gets suppressed for the time being. Some drug doses can vary from time to time and taking drugs safe at one time may cause harm at another time for the same person. (Goud, Kumar and Ramesh, 2014)

However inappropriate self-medication, may result in serious health hazards such as adverse drug reactions, drug dependence and increased resistance of pathogens. Self-Medication with antibiotics among students, termed, a silent epidemic. is a global problem. The consequences of inappropriate self-medication among healthcare professionals have severe implications including

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legal, ethical, health defects, negative impacts on patient and quality of health care delivery. Prior to any intervention for promoting rational antibiotic administration, it is prudent to determine the magnitude of SMA and the factors that contribute to this practice (Urmi *et al.*, 2015).

Many headache sufferers do not receive any preventive treatment even though they might benefit from. In addition in the case of very frequent headache excessive self administration over a period of time might cause the discomfort to worsen and increase in frequency, causing a state of chronic headaches, dependence on the analgesics and organic toxicity all of which can jeopardize the effect of prophylactic condition (Ferrari *et al.*, 1996).

To our knowledge, the occurrence of insomnia and its self-medication with alcohol has not been investigated simultaneously in alcoholic groups (4–6). Nevertheless, other studies provide useful frequency estimates of self-medication. Study reported that 62% of treated alcoholics believed that alcohol helped them sleep. Likewise, another study found that 60% of 92 male in patients with alcoholism reported hypnotic use of alcohol. These self-medication rates are greater than rates reported for the general population (6% to 13%) and for people with initial insomnia (15% to 28%) Perhaps the highest rate of self-medication was reported for a group of 155 older women (85 or more years old) with symptomatic insomnia, of whom 70% used alcohol for sleep (Brower *et al.*, 2001).

Although these medications are considered risk free and useful for the treatment of common health problems, their excessive use can also lead to serious side effects and unfavourable reactions. For instance, the therapy may be poorly suited for the illness in question, delay diagnosis and the beginning of effective therapy, increased inorganic risk(s) due to inadequate drug therapy or of unnecessary expense and drug interaction between prescription and non prescription drug. The prevalence of side effects was associated with lack of knowledge about the drug prior to its usage. Insufficient curative treatment with chloroquine (CQ) for individuals who treat themselves for suspected malaria fever could result in resistance to Plasmodium falciparum- the agent causing the ailment. Chronic CQ toxicity was important in the causation of heart block in Africa, CQ retinopathy and abnormal opthalmological findings, cardiacarrhythmia. Stevens Johnson syndrome following self medication with fansidar has been reported (Afolabi *et.al.*,2008).

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It is seen more for common health worries; one may take a medicine as he feel soreness in his throat. But there might be another medicine that can help him recover fast from the problem. Thus he may waste his money and also delay his recovery. People suffering from anxiety and depression are more prone to taking drugs that are dangerous. This observation is alarming because it leads to addiction and you all know what effects drugs and alcohol have on the body. potential dangers can also results from using wrong creams and lotions without the consultation of the doctor. The creams and lotions come loaded with harmful chemicals that can harm the skin if it is sensitive or unsuitable to that particular ointment (Sallam *et al.*, 2009).

The dangers of self medication include: (Sawalha *et al.*, 2007)

### **Misleading the illness:**

A minor health issue which could be resolved easily with the doctor's advice may become a major problem over time. Symptoms may subside temporarily with self medication but it would become difficult for a doctor to correctly diagnose and treat latter.

### **Habituation:**

One could become addicted to prescription drugs such as antacids, cough syrups and pain relievers.

### **Allergic Reaction:**

Some antibiotics such as penicillin or sulpha drugs can cause severe reactions in the body for some people. This could be fatal.

### **Insufficient dosage:**

Incorrect dosage of medicines will not cure and will prolong recovery. On the other hand, over dosage may damage liver, kidneys and other organs. Indiscriminate use of antibiotics: these could over a long time lead to microbial resistance. Consequently, the antibiotic may become ineffective when taken in the future.

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### **Risk of stroke:**

The most commonly misused medicines are painkillers. Analgesics can induce gastritis and can also increase risk of stroke by four times in patients in high blood pressure.

### **Drug interactions:**

Some herbal drugs and medicines may cause drug to drug interactions and adversely affect the body.

### **Self medication by pregnant women:**

This could adversely affect the unborn child causing congenital anomalies and birth defects. Unlike other factors of self care, self medication involves the intake of drugs, which have the potential to be beneficial or harmful. Their improper use can have serious health implications especially among children, the aged and in people with special physiological conditions such as pregnancy and lactation. The government and health authorities must ensure that only safe drugs are made available OTC. Consumers should be given adequate information about their safe use.

### **1.12 Role of Pharmacist to stop self medication**

In most countries pharmacies are conveniently accessible and, in them, pharmacists are available for a considerable period during each working day and no appointment to see them is necessary. In countries where pharmacies are not well distributed, the aim of governments should be to ensure that the vast majority of the public have convenient access to a pharmacy. Pharmacists have a professional responsibility to provide sound, unbiased advice and to ensure that self-medication is resorted to only when it is safe and appropriate to do so. Pharmacists have the necessary knowledge to advice on safe storage of medicines in the home and on safe disposal of medicines once a course of treatment has been completed or, in the case of a medicine, which is obtained for occasional use, when the expiry date has been reached. Pharmacists can also advise that medicines prescribed for one individual or purchased for the treatment of a specific medical condition should not be used by another person without professional advice first being sought (International Pharmaceutical Federation, 1996).

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Pharmacy Act 2007 requires that the supply of medicines be from a pharmacy under personal supervision of a pharmacist. Pivotal roles of the pharmacist to ensure and facilitate appropriate medicines utilisation. Legislative requirements under SI 488 of 2008 that when supply occurs that information and advice be provided. Robust regulatory framework provides for opportunity to develop pharmacy services. PI2020 looking at evolving roles in respect of ensuring health, MUR, medicines management, screening Evidence supportive that the development and promotion of self care is of value for the patient, and value for public health. (You *et al.*, 2011))

Medication compliance is one of the important elements in self-care. It is common for patients to use over-the-counter (OTC) medicines without the supervision of healthcare professionals, which can limit the opportunity for ongoing patient follow-up and safety monitoring. The establishment of a robust pharmacovigilance system is therefore advocate, in which pharmacists play an important role in providing advice to patients when they purchase OTC drugs. In the UK, there is also a move to promote the role of pharmacists and develop a broader concept of the primary care team. Pharmacist's role has been extended to tobacco cessation therapy, local health promotion, advice to family doctors and other health professionals, repeated prescription, advice to nursing and residential homes, health screening and diagnosis, etc. Meanwhile, general practitioners have also become more supportive of pharmacists' extended role in western countries (Urmi.*et.al.*, 2015).

The evolution of the Hong Kong healthcare system and the health policy might explain why Hong Kong people have a low acceptance rate on pharmacist-led self-care management. In Hong Kong, patients receive health services from either private or public sectors seldom have the opportunity to consult community pharmacists as patients usually receive prescribed medications from private doctors directly or from government clinic pharmacies. Community pharmacists would only have the chance to provide consultation when patients visited them to buy drugs over the counter. Patients, therefore, are not familiar with the role of pharmacists besides dispensing drugs and not very supportive of pharmacist-led self-care management (You *et al.*, 2011).

Role of a pharmacist can be: (Sawalha *et al.*,2007)

### **As a communicator**

- The pharmacist should initiate dialogue with the patient (and the patient's physician, when necessary) to obtain a sufficiently detailed medication history

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- In order to address the condition of the patient appropriately the pharmacist must ask the patient key questions and pass on relevant information to him or her (e.g. how to take the medicines and how to deal with safety issues)
- The pharmacist must be prepared and adequately equipped to perform a proper screening for specific conditions and diseases, without interfering with the prescriber's authority
- The pharmacist must provide objective information about medicines
- The pharmacist must be able to use and interpret additional sources of information to satisfy the needs of the patient
- The pharmacist should be able to help the patient undertake appropriate and responsible self-medication or, when necessary, refer the patient for medical advice
- The pharmacist must ensure confidentiality concerning details of the patient's condition

### **As a quality drug supplier**

- The pharmacist must ensure that the products he/she purchases are from reputable sources and of good quality
- The pharmacist must ensure the proper storage of these products

### **As a trainer and supervisor**

To ensure up-to-date quality service, the pharmacist must be encouraged to participate in continuing professional development activities such as continuing education. The pharmacist is often assisted by non-pharmacist staff and must ensure that the services rendered by these auxiliaries correspond to established standards of practice

To achieve this, the pharmacist must develop

- Protocols for referral to the pharmacist
- Protocols for community health workers involved with the handling and distribution of medicines. The pharmacist must also promote the training and supervise the work of non-pharmacist staff

### **As a collaborator**

It is imperative that pharmacists develop quality collaborative relationships with:

- Other health care professionals



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- National professional associations
- The pharmaceutical industry
- Governments (local/national) and
- Patients and the general public

In so doing, opportunities to tap into resources and expertise, and to share data and experiences, in order to improve self-care and self-medication, will be enhanced.

### **As a health promoter**

As a member of the health-care team, the pharmacist must:

- Participate in health screening to identify health problems and those at risk in the community
- Participate in health promotion campaigns to raise awareness of health issues and disease prevention; and
- Provide advice to individuals to help them make informed health choices

### **Specific situations**

In many developing countries, the ratios of pharmacists and pharmacies to population are so low that access to pharmaceutical care is impeded. In such cases, consultation with other health workers or community health care workers, household carers and other appropriate lay people, provided they have received the appropriate pharmaceutical training and orientation, should be encouraged (Brower *et al.*, 2001).

The majority of respondents supported self-care for chronic diseases. However less than half supported pharmacist-led self-care programmes despite the fact that elderly people and those with lower education level and a chronic condition were at high risk of encountering problems with OTC products. To overcome these limitations, self-care programmes provided by pharmacists should be gradually developed with the support of the Government (You *et al.*, 2011).

### 1.13 Common disease in children in where self medicated has been done

#### **Asthma:**

Asthma (AZ-ma) is a chronic (long-term) lung disease that inflames and narrows the airways. Asthma causes recurring periods of wheezing (a whistling sound when you breathe), chest tightness, shortness of breath, and coughing. The coughing often occurs at night or early in the morning.

Asthma affects people of all ages, but it most often starts during childhood. In the United States, more than 25 million people are known to have asthma. About 7 million of these people are children (Nhlbi.nih.gov, 2014).

#### **Pathophysiology of asthma:**

Asthma has many known "triggers," including physical exertion, allergens, medications, occupational infection, emotions and stress. In response to contact with a triggering substance or mechanism, mast cells of the immune system, which are found in loose connective tissue, are responsible for releasing vasoactive (action on vessels) chemical mediators, including histamine, bradykinin, leukotrienes, cytokines and prostaglandins. Chemotactic (produces specific cell movement) chemical mediators released from the mast cells cause neutrophils, lymphocytes and eosinophils to infiltrate the cells of the bronchial lining. These target the respiratory system and cause bronchoconstriction, vascular congestion, vasodilation, increases in capillary permeability, mucosal edema, impaired mucociliary action (removal of mucus and contaminants within the bronchial tree by movement of the cilia inside the bronchioles), and increased mucus production, which leads to an increase in airway resistance. Mucus plugging may also occur in the smaller bronchioles. These pathophysiologic factors produce the typical clinical presentation of asthma, including wheezing and respiratory distress. (Daniel *et al.*, 2004)

#### **Treatment of asthma:**

Asthma is treated with two types of medicines: long-term control and quick-relief medicines. Long-term control medicines help reduce airway inflammation and prevent asthma symptoms. Quick-relief, or "rescue," medicines relieve asthma symptoms that may flare up.

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## Long-Term Control Medicines for asthma

### Inhaled corticosteroids

Reduces inflammation and helps to prevent the chain reaction that causes asthma symptoms.

#### Side Effects:

- A mouth infection called thrush
- If taken for long periods, these medicines raise the risk for cataracts and osteoporosis (Nhlbi.nih.gov, 2014).

### Omalizumab:

A recombinant DNA-derived humanized monoclonal antibody, binds to the Cε3 domain of IgE and forms complexes that inhibit the immune system's response to allergens by averting IgE mediated inflammatory changes. In the airways of patients with allergic asthma, FcεRI+ and IgE+ cells and causes a profound reduction in tissue eosinophilia, together with reductions in submucosal T cell and B cell numbers. The reductions in circulating levels of IgE resulting from omalizumab treatment leads to reductions in FcεRI expression on mast cells, basophils and dendritic cells. This combined effect results in attenuation of several markers of inflammation, including peripheral and bronchial tissue eosinophilia, levels of GM-CSF, IL-2, IL4, IL5 and IL13. It may also reduce allergen presentation to T cells and the production of Th2 cytokines (Gamal, 2007).

**Side Effects:** Life-threatening allergic reaction called anaphylaxis might occur.

### Leukotriene Modifiers (Zafirlukast, Montelukast, Zileuton) :

These medicines are taken by mouth. They help block the chain reaction that increases inflammation in airways.

**Side Effect:** (Nhlbi.nih.gov, 2014)

- Skin rash
- Severe tingling
- Bruising
- Numbness

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- Pain
- Muscle weakness
- Anxiety
- Depression

### **Theophylline:**

Theophylline helps open the airways.

### **Side Effects:**

- Chest pain or discomfort
- Dizziness
- Fast, slow, or irregular heartbeat
- Increase in urine volume

### **Quick-Relief Medicines for asthma:**

#### **Inhaled short-acting beta2-agonists (Albuterol,Levalbuterol,MEtaproterenol)**

These medicines act quickly to relax tight muscles around your airways when you're having a flareup. This allows the airways to open up so air can flow through them.

### **Side Effects:** (Gamal, 2007)

- Palpitation
- Headache
- Skin rash
- Nausea
- Vomitting

### **Common Cold:**

The common cold, also known as rhinopharyngitis, is a type of respiratory tract infection caused by a virus. On average, adults have approximately three respiratory infections each year, but children are more commonly affected with up to 12 cold a year for children attending school. There is a higher incidence of colds in autumn (fall) and winter, as it is a season infection, although people may be affected at any time throughout the year (Smith, 2009).

### **Pathophysiology of common cold:**

A cold virus is deposited into the front of the nasal passages by contaminated fingers or by droplets from coughs and sneezes. Small doses of virus (1-30 particles) are sufficient to produce

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infection. The virus is then transported to the back of the nose and onto the adenoid area by the nose itself. The virus then attaches to a receptor (ICAM-1) which is located on the surface of nasal cells. The receptor fits into a docking port on the surface of the virus. Large amounts of virus receptor are present on cells of the adenoid. After attachment to the receptor, virus is taken into the cell where it starts an infection. New virus particles are produced in the infected cell. The infected cell eventually dies and ruptures, releasing newly made cold virus to infect other cells in the nose and start the process over again. The virus is much smaller than the cell. Cold symptoms are due mainly to the body's response to the infection. When a nasal cell is infected by a cold virus, the body responds by activating parts of the immune system and some nervous system reflexes. The immune system contains a variety of natural substances called inflammatory mediators. When activated by a cold virus infection, inflammatory mediators cause dilatation and leakage of blood vessels and mucus gland secretion. Inflammatory mediators also activate sneeze and cough reflexes and stimulate pain nerve fibers. These events are what lead to the symptoms of a cold (Bebenista and Nowak , 2014).

### **Treatment of common cold:**

Treatment has two goals: to make you feel better and to help you fight off the virus.

### **Paracetamol (Acetaminophen):**

The primary mechanism of action is believed to be inhibition of cyclooxygenase (COX), with a predominant effect on COX-2. Inhibition of COX enzymes prevents the metabolism of arachidonic acid to prostaglandin H<sub>2</sub>, an unstable intermediate byproduct which is converted to pro-inflammatory compounds. In the central nervous system, inhibition of COX enzymes reduces concentrations of prostaglandin E<sub>2</sub>, which lowers the hypothalamic set-point to reduce fever, and activation of descending inhibitory serotonergic pathways to produce analgesia (Bebenista and Nowak , 2014).

### **Side effects:**

- skin rash,
- hives, or itching,
- yellow eyes on skin

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### Overdoses causes:

- Diarrhea
- Increased sweating
- Loss of appetite
- Nausea or vomiting

### Respiratory Bronchitis:

Bronchitis is a respiratory disease in which the mucus membrane in the lungs' bronchial passages becomes inflamed which carry air to and from lungs. People who have bronchitis often cough up thickened mucus. Bronchitis may be either acute or chronic.

### Pathophysiology of Respiratory Bronchitis:

RSV infection is limited to the respiratory tract. Initial infection in young infants or children frequently involves the lower respiratory tract and most often manifests as the clinical entity of bronchiolitis. Inoculation of the virus occurs in respiratory epithelial cells of the upper respiratory tract. Spread of the virus down the respiratory tract occurs through cell-to-cell transfer of the virus along intra cytoplasmic bridges (syncytia) from the upper to the lower respiratory tract.

### Treatment of Respiratory Bronchitis:

#### Ribavirin:

The ability of ribavirin to inhibit respiratory syncytial virus (RSV) particle release and *RSV* gene expression by infected airway epithelial cells was found to be associated with reductions in IL-8 secretion, IL-8 mRNA expression, and nuclear factor-kappa B (NF- $\kappa$ B) activation. Using microarrays, ribavirin was shown to inhibit expression of the RSV-inducible chemokines MIP-1 $\alpha$  and MIP-1 $\beta$  and interferon, to up-regulate expression of RSV- and interferon-stimulated response genes, and to increase RSV-induced STAT-1 binding to the interferon-stimulated response element encoding antiviral proteins, suggesting that ribavirin potentiates interferon-stimulated response element signaling induced by RSV, thus enhancing the expression of antiviral interferon-stimulated response gene (Thomas *et.al.*, 2012).

### Side Effects:

- Anxiety, Black, tarry stools,
- Body aches or pain, chest pain,
- Congestion
- Diarrhea
- Sleeplessness,
- Nausea

### 1.14 Safety Dosage of Drugs

Safety is a major concern when the FDA considers reclassifying the prescription drugs as OTC. Most OTC drugs unlike health foods, dietary supplements (including herbs) and complimentary therapies have been studied scientifically and extensively. However all drugs have benefits and risks and some degree of risk has to be tolerated if people are to receive a drug's benefits.

Safety depends on using a drug properly. For OTC drugs proper use often relies on consumer self diagnosis, which leaves room for error. People who purchase OTC drugs should read instruction carefully because different formulation such as immediate release and control release (slow release) formulation may have the same brand name, the label should be checked is time a product is purchased and the dosage should be noted (Bhagavath *et.al*, 2010).

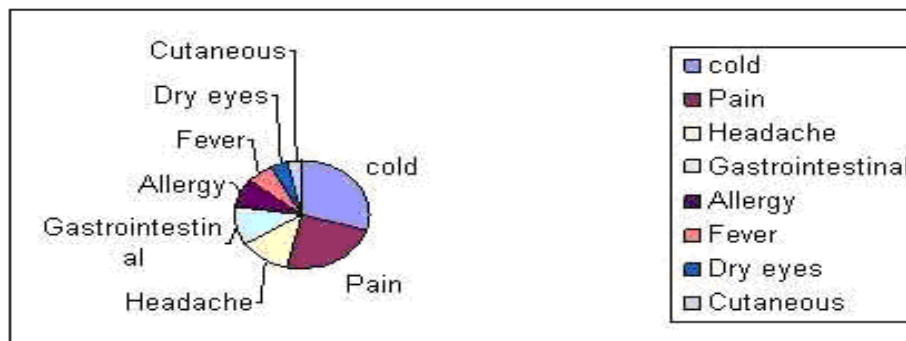
Safety in self medication (an overriding requirement) depends on four parameters

1. Drug: Its inherent properties, dose and duration of use, including its power to induce dependence.
2. Formulation: devised with unsupervised use in mind, e.g. low dose.
3. Information: available with all purchases (printed) and rigorously reviewed (by panels of potential users) for user friendliness and adequacy for a wide range of education and intellectual capacity.
4. Patient compliance (Jain *et.al.*, 2011).

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### 1.15 Condition treated by self medication

There is a wide variety of conditions, given in figure. In which OTC drugs are used. Most commonly available OTC medications are pain killers, cough and cold remedies, anti-allergy medicines, vitamins and energy tonics. Although these medications are considered risk-free and useful for the treatment of common health problems, their excessive use can also lead to serious side-effects and unfavorable reactions. Generally Consumers tend to utilize private pharmacies rather than public facilities for self medication (Goel *et.al.*, 1996).



**Figure: 1.1:** Patient preferences for OTC drugs patient preferences for OTC drug (Afolabi *et.al.*, 2008)

### 1.16 Self-medication and Drug dependency

The abuse of various self medication compounds for chronic illnesses may or frequently lead to a state of dependency. Aspirin, acetaminophen and caffeine were the most frequently abused among chronic headache sufferer. Substance abuse and drug dependency have multiple causes ranging from

- Poor instructions from the physician,
- Improper diagnosis with gradual increase in amount consumed, a reinforcement mechanism and brain stimulation effects.

For instance, cocaine acts directly on the “pleasure centers” of the brain to release dopamine which triggers an intense craving for more of the drug otherwise a painful withdrawal symptom



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persist. It therefore produces pleasurable sensation of “reward” and physical dependence (Afolabi *et.al.*, 2008).

Nicotine, the psychoactive ingredient in cigarettes is an addictive agent that can stimulate and relax the user. Hence, some smokers self-treat negative moods with it. Approximately, 30% of women from a study conducted in the United States, smoke cigarette during pregnancy despite its deleterious effect on the mother and foetus. The beverage, alcohol (ethanol) was so commonly consumed that it is seldomly thought of as a drug.

When consumed in small quantity, it induces a feeling of well being and relaxation while in large amounts, intoxication is produced. It can therefore be used as a form of self medication to achieve any of these states. It may also be used to cope with perceived problem of sexuality (Jogdand, Phalake and Nandal, 2013).

The relationship between self medication and drug dependency was explained with the self medication hypothesis of addictive disorders defined by Khantzian as motivation of patients to seek a specific drug (reinforcement mechanism) for relief of a particular set of symptoms for adaptive purposes. However, not all cases of drug dependencies follow this hypothesis because there are traits or symptoms which separate various groups of drug dependent individuals. As a result, Khantzian revisited his theory in 2003 and stated that there was growing clinical support for the significant relationship between substance abuse disorders and psychiatric disorders as opposed to simple personality. Hence, people who are not receiving proper mental health treatment are attempting to self medicate for their disorders by using illicit substances (Sherazi *et al.*, 2012).

### **1.17 Self medication and Antibiotic or Antimicrobial resistance**

Antibiotic resistance occurs when an antibiotic has lost its ability to effectively control or kill bacterial growth; in other words, the bacteria are "resistant" and continue to multiply in the presence of therapeutic levels of an antibiotic. With the discovery of antimicrobials in the 1940s, scientists prophesied the defeat of infectious diseases that had plagued humankind throughout history. However, the remarkable healing power of antibiotics invites widespread and often

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inappropriate use. This misuse and overuse of antibiotics leads to antibiotic resistance among bacteria and consequent treatment complications (Tufts.edu, 2004).

A major problem with self-medication with antibiotics/ antimicrobials is the emergence of drug resistance. Antimicrobial resistance is a current problem world-wide; particularly in developing countries. It is widely believed that human malpractices such as inadequate dosing, incomplete courses and indiscriminate drug use have contributed to the emergence and spread of antimicrobial resistance. The consequence of these is the loss of relatively cheap drugs that will require new drugs development, which will be more expensive and will further disadvantage patients in developing countries such as Sudan. The rational use of antibiotics is thus of utmost importance to limit the increase in bacterial resistance (Awad *et al.*, 2005).

The determinants of self-medication with antibiotics in low-income countries include over-the-counter sale of antibiotics, the cost of medical consultation, low satisfaction with medical practitioners, and misconceptions regarding the efficacy of antibiotics. Studies in the USA showed that recent immigrants from Latin American countries, where antibiotics are available over-the-counter, had the greatest expectations for antibiotics for upper respiratory infections. The cultural beliefs and a lack of health insurance were other possible determinants of self-medication with antibiotics for these immigrants (Grigoryan *et al.*, 2008).

Antibiotic resistance is an international pandemic that compromises the treatment of all infectious diseases. At the present time, resistance essentially is uncontrollable. The reasons behind the establishment and spread of resistance are complex, mostly multi-factorial, and mostly unknown. Resistance is often portrayed as simply an undesirable consequence of antibiotic abuse or misuse, but the rate of antibiotic resistance emergence is related to all uses of drugs, not just misuse, and the total amount of antibiotics used and the environment also play roles. The main driving factor behind resistance may actually be a lack of adequate hygiene and sanitation, which enables rapid proliferation and spread of pathogen (Bhagavath *et.al*, 2010).

Antimicrobials are the most commonly prescribed group of drugs in general practice and in hospitals. Despite the improved trend of health care in Bangladesh, infectious diseases remain priority public health problem, where widespread use of different antimicrobials against

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bacterial, fungal, viral and parasitic infections is required. Most antimicrobials are prescribed, with the decision to apply based on best-guess empiric therapy. A majority of the prescribers in Bangladesh diagnose infection by clinical assessment and suspect a microbial etiology (Faiz, M. and Basher, A., 2011).

Antibiotic resistant pathogens in Bangladesh:

<i>Salmonella typhi</i>	<i>Streptococcus pneumoniae</i>
<i>S typhimurium</i>	<i>Plasmodium species</i>
<i>Shigella dysenteriae type 1</i>	<i>Nosocomial pathogens</i>
<i>Neisseria gonorrhoeae</i>	<i>Pseudomonas spp.</i>
<i>Staphylococcus species</i>	<i>Acinetobacter spp.</i>
<i>Enterococcus species</i>	<i>Klebsiella spp.</i>
<i>Mycobacterium tuberculosis</i>	

In Bangladesh, misuse and waste of antibiotics appear to be frequent. Over the-counter availability of all types of *Plasmodium SI* antibiotics makes the situation worse. Antibiotic prescribing by the physicians appears to be less than ideal. The widespread and inappropriate use of antibiotic results in the development of a progressively antibiotic-resistant microbial ecosystem in Bangladesh (Rahman and Rahman, 1998).

### **1.18 Process to discourage self medication:**

According to WHO guidelines responsible self-medication can help prevent and treat diseases that do not require medical consultation and reduce the increasing pressure on medical services for relief of minor ailments especially when resources are limited. Otherwise self medication if not based on authentic medical information can lead to irrational use of drugs, wastage of resources, and increased resistance of pathogens and can lead to serious health hazards such as adverse drug reaction and prolonged morbidity. Not much is known about health related problems and healthcare utilization, including self medication among young adults. The youth are highly influenced by the media and the internet which promote self-medication behavior. The

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increased advertising of pharmaceuticals poses a larger threat of self medication to the younger population in general. This raises concerns of incorrect self-diagnosis, drug interaction, and use of drugs other than for the original indication (Bhuvana and Patil, 2015).

In developing countries, such as Papua New Guinea (PNG), self-medication may pose a threat to public health unless the population is adequately educated on responsible self-medications, so as to avoid problems associated with irrational medicine use. PNG has a fair share of Health Service problems, with reports indicating that anti-malarial medicine resistance and resistance to some antibiotics are on the increase (Meaurio, Temple and Lauwo, 2011).

Strict measures are needed to monitor advertisements of medicines both in print and electronic media. The possibility of having access to medicines not listed as OTC drugs should be minimized by taking appropriate monitoring measures including implementing effective legislation. There is also a need to explore the possibility of developing partnerships between physicians, pharmacists and consumers to educate and disseminate information on self medication. so that threats can be minimized. Medication should be taken on the advice of a doctor or a trained health professional. Proper drug control is very important. Drug should not be dispensed without prescriptions. There should be proper maintenance of records of dangerous drugs, by shop selling medicines. Drugs inspectors should be more vigilant in checking these pharmacist. Sometimes antibiotics are given only for a one or two days. There should be some restrictions on over the counter drugs (Hussain and Khanum, 2008).

Mixing drugs can have an unpredictable effect, as it is difficult to predict how the drugs will interact. When dropping off a new prescription at the pharmacy, patients should ask about drug interactions. It's also a good idea for patients to use the same pharmacy for all of their prescriptions so that interactions will be spotted more easily in the computer system. Patients also can take charge of their health by using an online tool to check interactions each time they are prescribed a new drug, they buy an OTC medicine or they pick up a dietary supplement (Bhuvana and Patil, 2015).

# LITERATURE REVIEW

### **Literature Review:**

#### **Prevalence of self-medication practices and its associated factors in Urban Puducherry, India:**

This study was also aimed at assessing the attitude of respondents who had experienced self-medication. This cross-sectional study was done in field practice area attached to a medical institution in urban Puducherry. A total of 352 subjects from 124 households were selected by random sampling. With pretested interview schedule, information regarding self-medication use in the past three months and associated socio demographic factors, purpose, source of drug procurement, attitude toward self-medication use were collected. Prevalence of self-medication was found to be 11.9%. Males, age >40 years and involving in moderate level activity of occupation, were found to be significantly associated with higher self-medication usage ( $P < 0.05$ ). Fever (31%), headache (19%), and abdominal pain (16.7%) are most common illnesses where self-medication is being used. Telling the symptoms to pharmacist (38.1%) was the commonest method adopted to procure drugs by the users. Majority of the self-medication users expressed that self-medication is harmless (66.6%) and they are going to use (90%) and advice others also (73.8%) to use self-medication drugs (Selvaraj and Ramalingam, 2014).

#### **Drug prescription and self-medication in India: An exploratory survey**

Greenhalgh et al (2002) conducted a study among the self medication and prescription drugs. This paper reports a study of the prescribing and dispensing of drugs in India. The drugs supplied to 2400 patients by the public and private medical sectors and by private pharmacies (over the counter dispensing) were recorded, and were analyzed with respect to the patient's presenting complaint and diagnosis. The main findings discussed in this paper are-Large numbers of drugs are prescribed by doctors in the private sector. Combination preparations containing 'hidden' classes of drug are often given. Anti-infectives are widely and often inappropriately used. Potentially dangerous drugs are sold over the counter and prescribed for trivial or bizarre indications. Drugs which have been withdrawn as dangerous in the West remain popular first line drugs in India. Food supplements and tonics of dubious nutritional and pharmacological value make up a high proportion of the total drugs bill (Greenhalgh, 1987).

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### **Parental Self Medication of Antibiotics for Children in Bagdad City:**

Jasim et al (2014) designed a study as the cross sectional descriptive study in which the data was collected via direct interviews with the parents using previously prepared questionnaires. A total of 124 parents with the practice of self medication for their children were included. The majority of children were 1-6 years old and male children were slightly more than females. The main reason of self medication was dealing with same current ailments previously followed by considering the current illness as mild one. The major sources of information about self medicated antibiotics were previous prescription and community pharmacists. The most frequent source of antibiotics was the community pharmacies. Upper respiratory tract conditions were the commonest indication for self medication. Amoxicillin was found to be the most frequently acquired and utilized antibiotic in this study (Jasim, 2014).

### **Association between parental attitudes and self-medication of their children:**

Sanna et al (2012) conducted a study to identify how parental attitudes toward medicines are associated with how they medicate their children with self-medication including the use of over-the-counter (OTC) medicines and complementary and alternative medicines (CAMs). Setting a cross-sectional population-based study was conducted in the spring of 2007. The study sample consisted of a random sample of Finnish children under 12 years of age (n = 6,000). Method a questionnaire was sent to parents, and the parent who usually takes responsibility for the child's medication was instructed to answer the questionnaire. Main outcome measure the responding parent was asked to report the child's use of OTC medicines and CAMs during the preceding 2 days. The parent's attitude toward medicines was measured by 18 statements using a 5-item likert scale. Results CAM use was least likely among children whose parent had a positive view of prescription medicines. In contrast, a positive attitude toward OTC medicines by a parent was associated with both, OTC medicine and CAM use among children, whereas, parental worry about the risks of medicines predicted the use of CAMs among children. Conclusion this study showed that parental attitudes toward medicines have an impact on how they medicate their children, especially with CAMs. This finding highlights the fact that health care professionals

## Literature Review

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should negotiate a child's treatment, taking into account parental views toward medicines, and previous use of self-medication (Saponen, Ahonen and Kiviniemi, 2012).

### **Drug use and self-medication among children with respiratory illness or diarrhea in a rural district in Vietnam: a qualitative study:**

A qualitative study was conducted, using in-depth interviews with two drug sellers and three health care providers, and four focus-group discussions with mothers of children under 5 years of age. Verbatim transcriptions were analyzed, and emerging themes and categories identified, using content analysis. Use of a number of different drugs was reported, including broad-spectrum antibiotics and corticosteroids. There was poor awareness of side-effects, antibiotic resistance, and drug efficacy. Factors influencing self-medication were perceptions of the illness in the child, waiting time, and convenience, the attitudes of public health medical staff, insufficient drug supply in public health facilities, and poor control of prescribed drugs on the market. Misuse and misconceptions regarding drug use gave rise to considerable problems. Mothers' knowledge and attitudes to illness and health care services played an important role in determining the nature of self-medication. Financial barriers were not the only obstacle to adequate treatment. Health services should be more accessible and responsive to the needs of the population (Hoan Le *et al.*, 2011).

### **Self-medication for infants with colic in Lagos, Nigeria:**

It is a prospective study conducted at the vaccination clinics of 20 primary health care centres, each from different Local Government Areas in Lagos, Nigeria. Eight hundred mothers that brought their infants for vaccination between April and September, 2006 were interviewed with open-and close-ended questionnaire. Six hundred and eighty three (85.4%) mothers claimed they had a good knowledge of colic. Incessant and excessive cry was the main clinical feature of colic identified by 430(62.9%) mothers. Three hundred and seventy eight (67.7%) infants were treated by self-medication, 157 (28.1%) sought medical intervention and 17 (3.1%) were treated at a traditional birth attendant home. Herbal medicines constituted 51.8% of the self-medicated medicines, of which 48 (26.2%) were "Ororo Ogiri". Nospamin<sup>®</sup> (49.5%) and Gripe water<sup>®</sup>



## Literature Review

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(43.0%) were the two frequently prescribed and self-medicated medicines for infants with colic (Oshikoya, Senbanjo and Njokanma, 2009).

### **Self-medication with Antibiotic in Children in Sana'a City, Yemen:**

This is a descriptive study conducted in the outpatient department of Sam hospital Sana'a city Yemen, during a five months period from December 2007 to April 2008. 2000 patients (1110 males and 890 females) were seen for different causes during that period. All patients were asked if they used antibiotics in the last 15 days without medical prescription, what type of antibiotic, why and how they obtained it. The age and sex of the patients were also recorded. The age group of the patients ranged from 0-15 years. Of the 2000 patients interviewed, 1200(60%) had taken an antibiotic in the last 15 days without a medical prescription. Respiratory (80%) and gastrointestinal (13%) symptoms were most frequently reported. 312(26%) patients used the previous prescription paper to obtain antibiotics, while 888(74%) obtained antibiotics from pharmacies and drug stores without any prescription required. Amoxicillin, Trimethoprim, sulfamethoxazole and amoxicillin-clavulanic acid accounted for (85%) of the prescribed antibiotics (Mohanna, 2010).

### **Mothers' understanding of childhood malaria and practices in rural communities of Ise Orun, Nigeria: implications for malaria control:**

A community-based cross-sectional study was done at rural communities of Ise-Orun local Government area, Nigeria. We randomly sampled 422 mothers of children less than 5 years and administered a validated questionnaire to assess their perceptions and practices relating to childhood malaria. We used a 10-point scale to assess perception and classified it as good ( $\geq 5$ ) or poor ( $< 5$ ). Predictive factors for poor perceptions were identified using logistic regression. Approximately 51% of the mothers had poor perception and 14.2% ascribed malaria illness to mosquito bite only. Majority (85.8%) of the mothers practiced malaria preventive measures, including: Insecticide treated nets (70.0%), chemoprophylaxis (20.1%) and environmental sanitation (44.8%). Of the 200 mothers whose children had malaria fever within the 3 months prior to the study visits, home treatment was adopted by 87.5%. Local herbal remedies were

## Literature Review

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combined with orthodox medicine in the treatments of malaria for 91.5% of the children. The main reasons for not seeking medical treatment at existing formal health facilities were "high cost", "challenges of access to facilities" and "mothers' preference for herbal remedies". Lack of formal education was the only independent predictor of poor malaria perceptions among mothers (Orimadegun and Ilesanmi, 2015).

### **Management of Childhood Febrile Illness Prior to Clinic Attendance in Urban Nigeria:**

A year-long study was conducted among 1,943 sick children and their caregivers who attended the largest government-owned paediatric hospital in Lagos, Nigeria. The major complaints mentioned by the caregivers included fever, cough, and diarrhoea. Most (89%) caregivers had administered some form of medicine to the child prior to the clinic visit, and on average, 2.5 medications had been given. Associations were found between major complaint and type of medicine given: fevers were associated with antimalarial drugs and analgesics (antipyretics), cough was associated with cough syrup and analgesics, while diarrhoea was associated with antidiarrhoeal drugs. Although one-fifth of the children had received an antibiotic, provision of antibiotics was not associated with a particular complaint/illness. Since caregivers appeared to use perceived complaints/illnesses as a treatment guide, this can form the basis of safer and more appropriate recognition of illness and home management. In addition, the information obtained in this study can be used for training clinicians to inquire about home management and, thus, for making more informed decisions about their own treatment and prescribing practices (Afolabi, Brieger and Salako, 2004).

## Aims and Objective of the study

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### **Aims and Objective of the study**

The aims and objectives of this study were to:

- Estimate the educational status of the parents, and income level of the family which is related to knowledge about the medicines and afford to buy medicines.
- Determine current health status of the children, common diseases of them.
- Determine the prevalence and pattern of self medication practices in Dhaka city
- Determine parent's knowledge, attitude and practice of self medication to their children

# CHAPTER TWO METHODOLOGY

## **Materials and Method**

### **2.1. Study Subjects:**

We carried out a systematic exploration of the prevalence of practices of self-medication among the children of Dhaka City. The age group of children was 0-12 years. This age was divided into four groups in the questionnaire for the convenience of survey.

### **2.2. Study Design:**

This study involved a simple questionnaire based survey. The question was divided into three segment and total 36 questions were contained in the questions. The questions were filled by the parents of the children. It was included all class of people from the highly income parents to lower income parents and their education level to correlate their self medication on the basis of this things. The target was the children of the Dhaka City. Children who suffered a disorder in last six months and child took medication in last six months were included in the survey.

### **2.3. Study Period:**

The study was conducted from January 2015 to December 2015. To complete the study in time, a work schedule was prepared depending on the different task of the study. Two months were spent for selection of topic, development of protocol and related writings. Eight months were spent on official correspondence, data collection, data analysis, report writing and submission of report.

### **2.4. Study Area:**

We collected data from different places in Dhaka city.

### **2.5. Study Population:**

The parents of children of Dhaka were considered as study population of my study.

### **2.6. Sample Size:**

There were 503 parents of children who participate in the survey. The question was filled up by father or mother of child.

## **2.7. Questionnaire Development**

The pre-tested questionnaire was specially designed to collect the background demographic data and the detailed exposure information. The questionnaire was written in simple English in order to avoid unnecessary semantic misunderstanding. The questionnaire was pilot tested to ensure it was understandable by the participants. Extra space was however, allowed after some questions for the participants' comments; and in most cases, these were used as qualifying remarks which aided considerably in giving answers to specific questions and in providing additional information which assisted the interviewers in drawing up conclusions. Sometimes questions were filled up by us in case of the illiterate person.

## **2.8. Sampling Technique:**

Samples were collected by non-probability convenient technique.

## **2.9. Data Collection Instrument:**

Data was collected by the researcher herself using a pre structured questionnaire.

## **2.10. Data Analysis:**

After collection of data it was checked by the researcher for completeness or any discontinuation. After completion of checking, data were entered into Micro soft xL, software in a computer for analysis in the line of objectives .Then the data were presented in diagrams and tables.

## **2.11. Key variables with operational definition:**

- a) Age: Age is recorded in year as stated by the participants. It is below 12 years.
- b) Study: Study of the participant means the academic discipline whether he/ she studied in primary, secondary or higher education level or not.
- c) Occupation: It means that what is the profession of father or mother of that child.
- d) Monthly family income: Monthly income means income of the parents/guardians.

## 2.12. Questionnaire:

### **PREVALENCE AND PATTERN OF SELF-MEDICATION PRACTICES IN CHILDEN IN DHAKA CITY**

**(Department of Pharmacy, East West University)**

(All the questions asked are used for research purpose only and all the information is kept confidential)

Place of Interview: \_\_\_\_\_

Date of Survey: \_\_\_\_\_

**Place a tick (✓) on your choice of answer**

#### **DEMOGRAPHIC INFORMATION**

1. Parent filling up the questionnaire:  Father  Mother  Others \_\_\_\_\_

2. Education level:  Primary school  School certificate (class 10 equivalent)  High school (class 12 equivalent)  Non-university diploma  Bachelors (university)  Post graduate (university)

3. Occupation:  Studying  Homemaker  Healthcare professional  Unemployed  Service Holder  Businessman   
Others \_\_\_\_\_

4. Net household income (BDT) :  < Tk 5000  Tk 5000-10,000  Tk 10,000-30,000  Tk 30,000 <   
Do not want to disclose

5. Number of child in the family:  1  2  3  Others \_\_\_\_\_

6. Have you ever taken a degree in health care?  Yes  No

7. Age of child (who is medicated):  < 3 months  3 months- 1 yr  1-5 yr  5-12 yr

8. Gender of child:  Male  Female

9. Child (who is medicated) is:  1<sup>st</sup> born  2<sup>nd</sup> born  3<sup>rd</sup> born  Others \_\_\_\_\_

#### **CHILD'S DISEASE AND MEDICATION USAGE INFORMATION:**

10. Did the child suffer from any disease, disorder or injury in the past 6 months that required use of medication?  Yes  No

11. What was the nature of the child's disease, disorder or injury?  Respiratory (asthma/cough/others \_\_\_\_\_)  Gastrointestinal (diarrhea, constipation, others \_\_\_\_\_)  Fever  Common cold  Dermatological   
Others \_\_\_\_\_

12. What was your opinion about the health status of the child?  good  fairly good  moderate  fairly poor  poor

## Methodology

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### **PARENTAL PERCEPTION AND UNDERSTANDING OF DRUG USE**

13. How did you respond when your child suffered from the disease, disorder or injury?  consulted a doctor and medicated according to prescription  consulted a non-prescribing health care professional  waited until the disease, disorder or injury relieved itself  self-medicated

*Answer question 14 to 17 ONLY if you have self medicated your child with any drug.*

14. Do you think self medicating your child is safer than receiving medications upon consult?  Yes  No  Vary disease to disease  Do not know

15. What were your reasons for self medicating your child?

- Considered ailment as minor, not requiring physician's consult  Self decision by parents
- Previous treatment by physician was unsuccessful  Long waiting time to avail the doctor
- Asked doctor for a medication, but he refused to prescribe  Shortage of drug supply in stores
- Previous prescription as reference for same illness  High cost of treatment in private clinics
- Taking the child along is inconvenient  Lack of nearby health care provider
- Problems with behavior/attitude of medical staff (scolding/ indifference
- Others: \_\_\_\_\_

16. Name the drug(s) you self medicated to your child? \_\_\_\_\_

17. What was the treatment schedule of the drug you gave to your child? Mention the doses and dosing intervals. \_\_\_\_\_

18. Are you aware of the side effects of the drug your child is given?  Yes  No

19. Did you learn about the drugs before administering it to your child?  Yes  No

20. Where did you obtain information regarding the drugs?  Health care professionals  Drug sellers  Family and friends  Media (TV/radio/newspaper etc)  Patient information leaflet or package insert  Others \_\_\_\_\_

21. Where did you get the medications from when you self medicated your child?  OTC from dispensaries  Health care professionals other than relevant doctor  Friends and family  Family medicine cabinet  Others \_\_\_\_\_

*Answer question 22 to 25 ONLY if you have consulted with doctor to administer drugs to your child*

22. Name the drug prescribed for your child. \_\_\_\_\_

23. Do you agree with the treatment schedule provided by the doctor?  Yes  No

24. Did you ask the doctor to prescribe any drugs for your child?  Yes  No



## Methodology

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25. Did you ask the doctor to prescribe any specific drug for your child?  Yes  No

26. Do you think doctors prescribe drugs to children too easily?  Yes  No

27. Did you discontinue the drug therapy before the standard length of therapy?  Yes  No (skip question 28)

28. If you have answered Yes to Question no. 27, why did you discontinue the drug?  symptoms have disappeared  drugs ran out  side effects appeared  child was unwilling to take the medication  others \_\_\_\_\_

29. Has your child suffered from any side effects due to the use of medication (such as allergy/ diarrhea/ pain etc)?  Yes  No (skip question 30)

30. If you have answered Yes to Question no. 29, what side effects did your child show? \_\_\_\_\_

\_\_\_\_\_

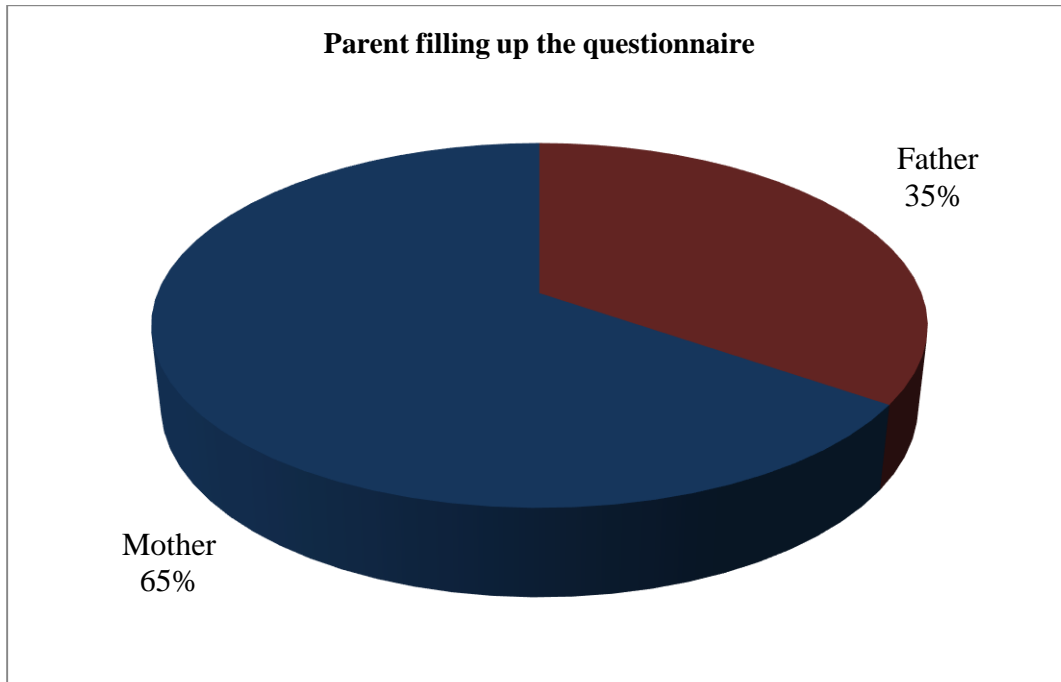
### Status of parental understanding of antibiotic use and resistance

	Statements	Agree	Disagree	Neither agree or disagree	Don't know
31.	Antibiotic resistance is promoted by using antibiotics when they are not needed				
32.	Antibiotic resistance is promoted by not completing the full course of antibiotics				
33.	Antibiotic resistance is promoted by self medication of antibiotics				
34.	Antibiotic resistance is promoted by using antibiotics with other drugs				
35.	Viral infection with fever should be treated with antibiotics				
36.	Antibiotics will always be effective in the treatment of same infection in future				

# CHAPTER THREE RESULT

## Result

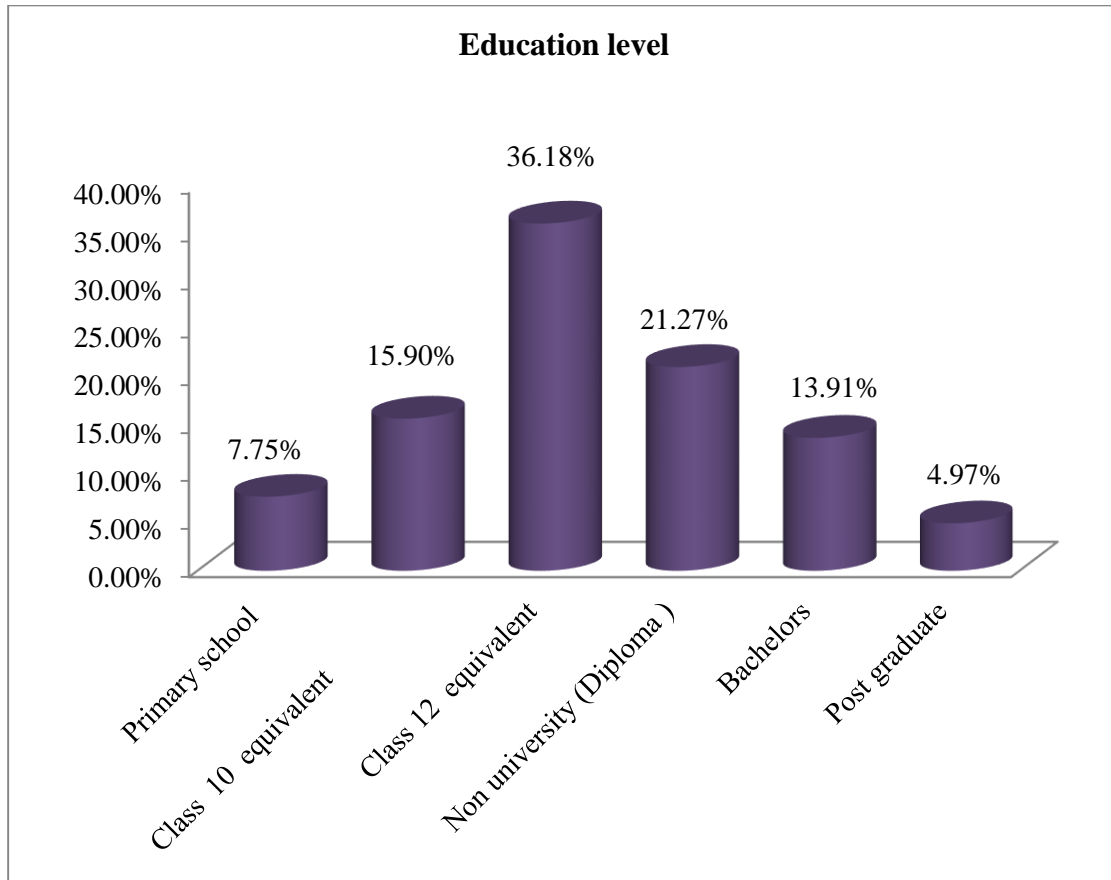
### 3.1. Parent filling up the questionnaire



**Figure: 3.1: Parent (respondent %) who are participants to fill up the questions**

Above illustration depicts that most of the respondents were mother (65%) to fill up the questionnaire to give information about their children health status, disease condition and medication.

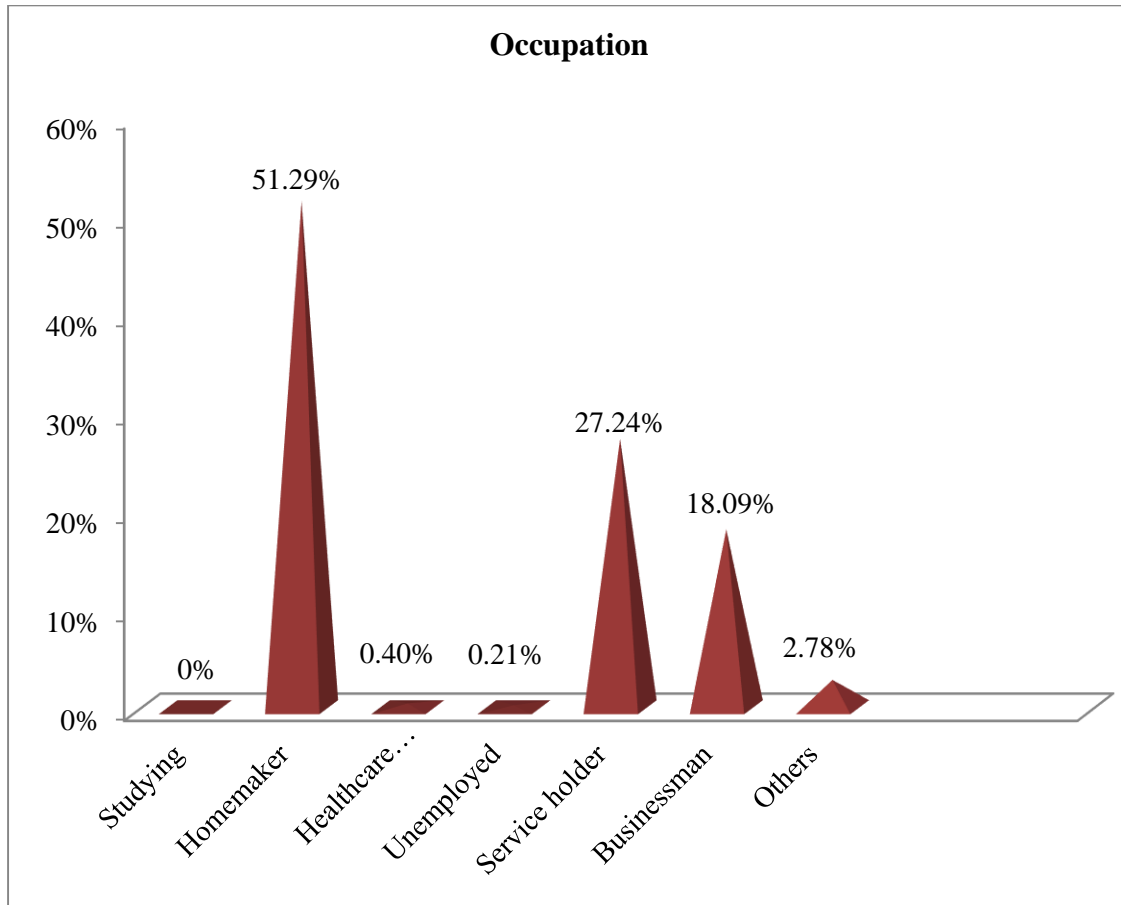
## 3.2. Education level



**Figure: 3.2: Educational status (%) of respondents**

Education level of majority of the respondents were class 12 equivalent or below. Lower percentage of respondents had any higher degree of education.

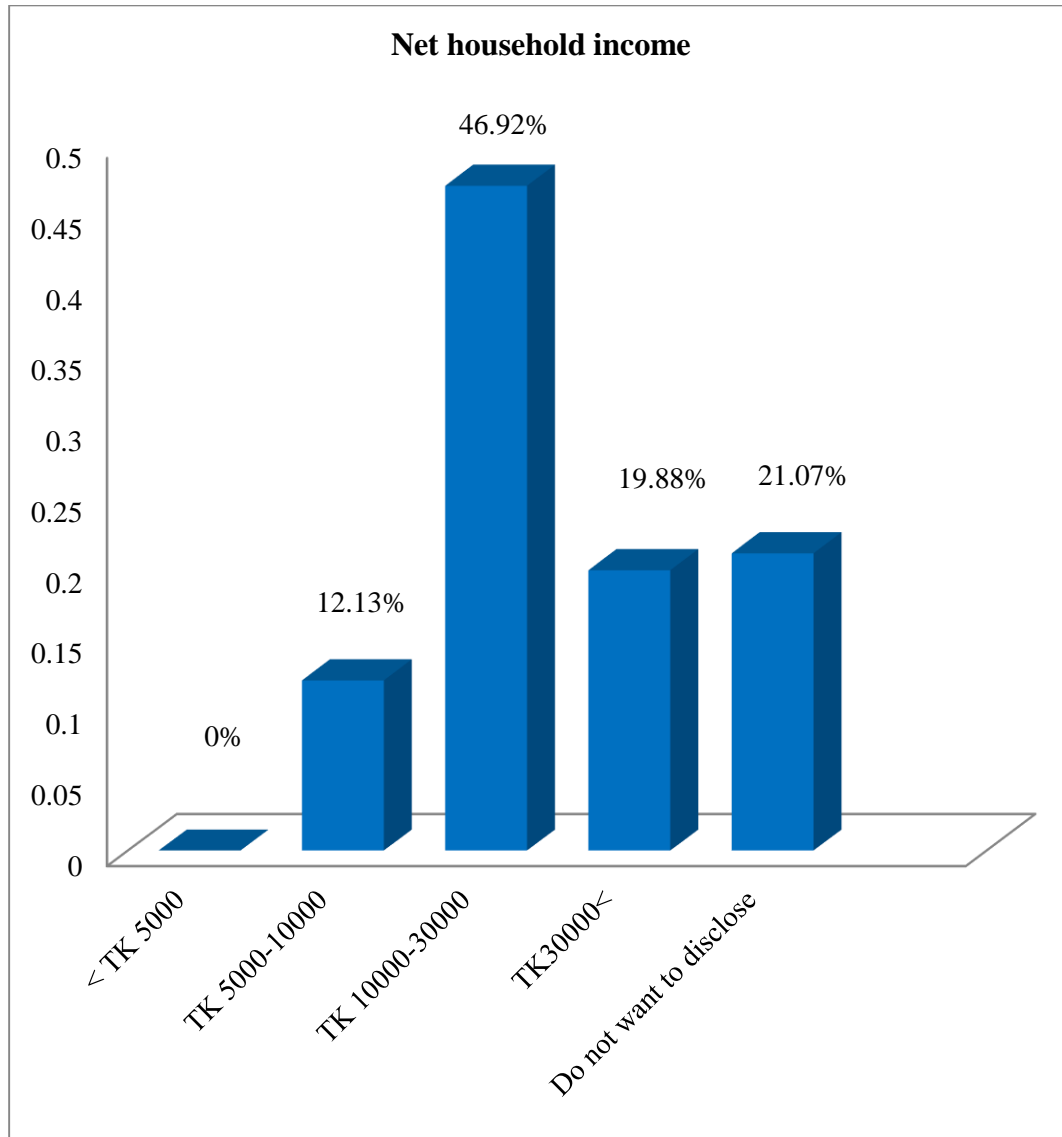
## 3.3. Occupation



**Figure: 3.3: Occupation of the participants (%)**

There were no student respondents. Maximum respondents (51.29%) were homemaker. Significant percent are employed (service holder/ businessman). Others (rickshaw puller, bus driver, servant, tea seller (2.78%)) were also included in a small number.

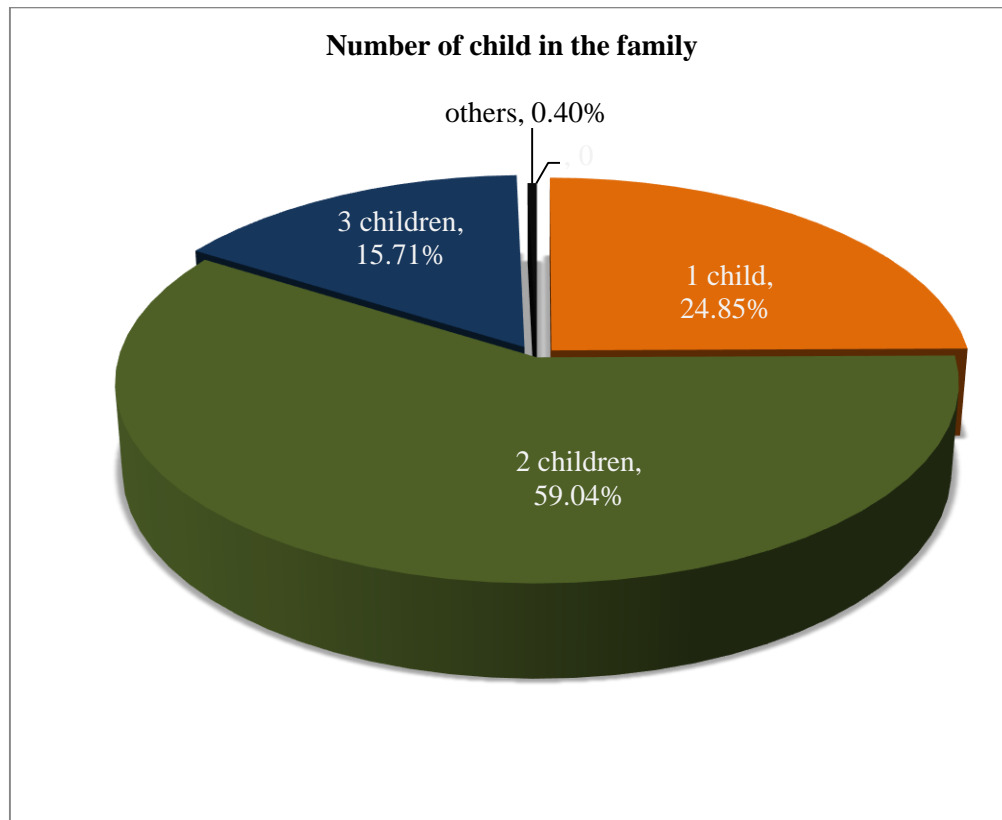
## 3.4. Net household income



**Figure: 3.4: Net household monthly income (%) of family**

The highest percentage of monthly income level of the participants is in the range of Tk 10000-30000 (46.92%). The lowest income level showed Tk 5000-10000. There were no participants whose family income level below Tk 5000 (0%). A high percentage of respondents did not want to reveal their income status.

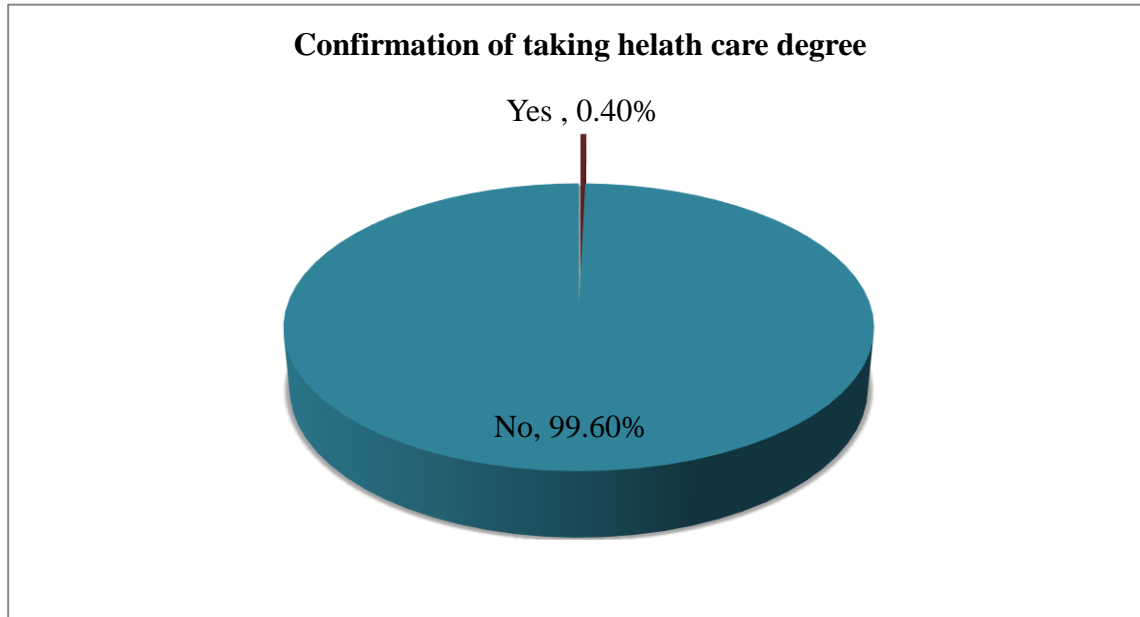
### 3.5. Number of child in the family



**Figure: 3.5: Number of child (%) in the family**

We have found that most of the parent has 2 children (59.04%). A certain portion (0.40%) included others (4 children).

### 3.6. Confirmation of the taking health care degree of respondents

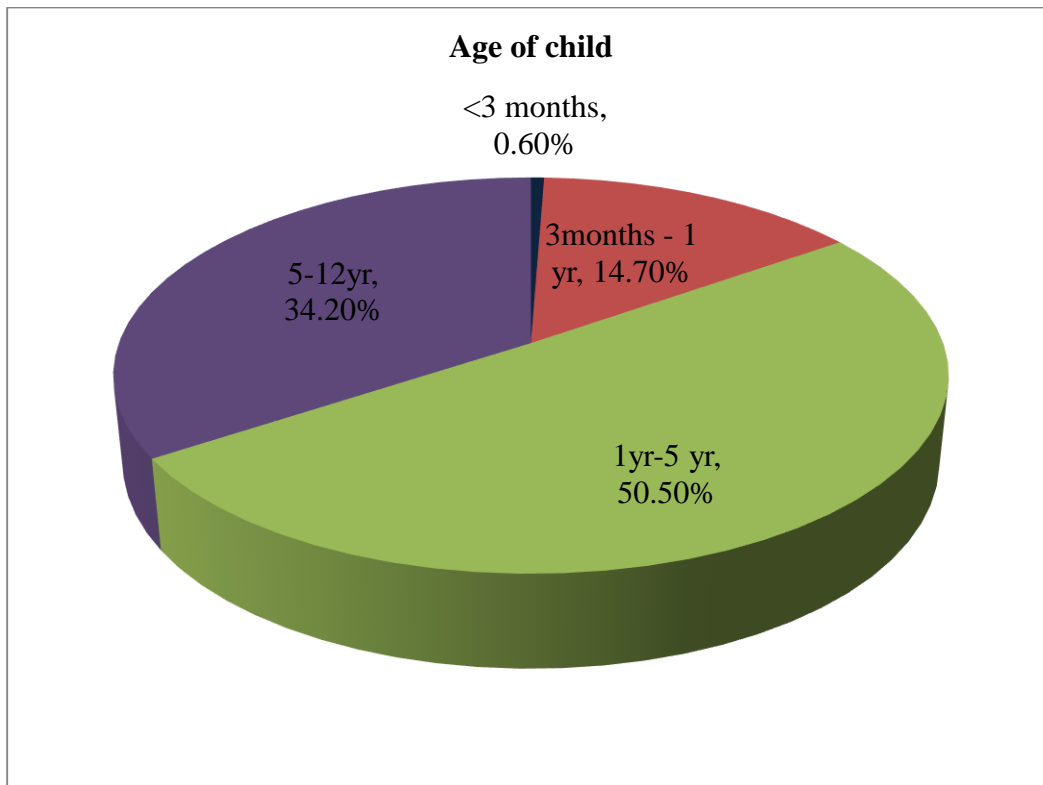


**Figure: 3.6: Taken a degree in health care or not (%)**

Maximum of the respondents (99.60%) had not taken the health care degree of any sort.



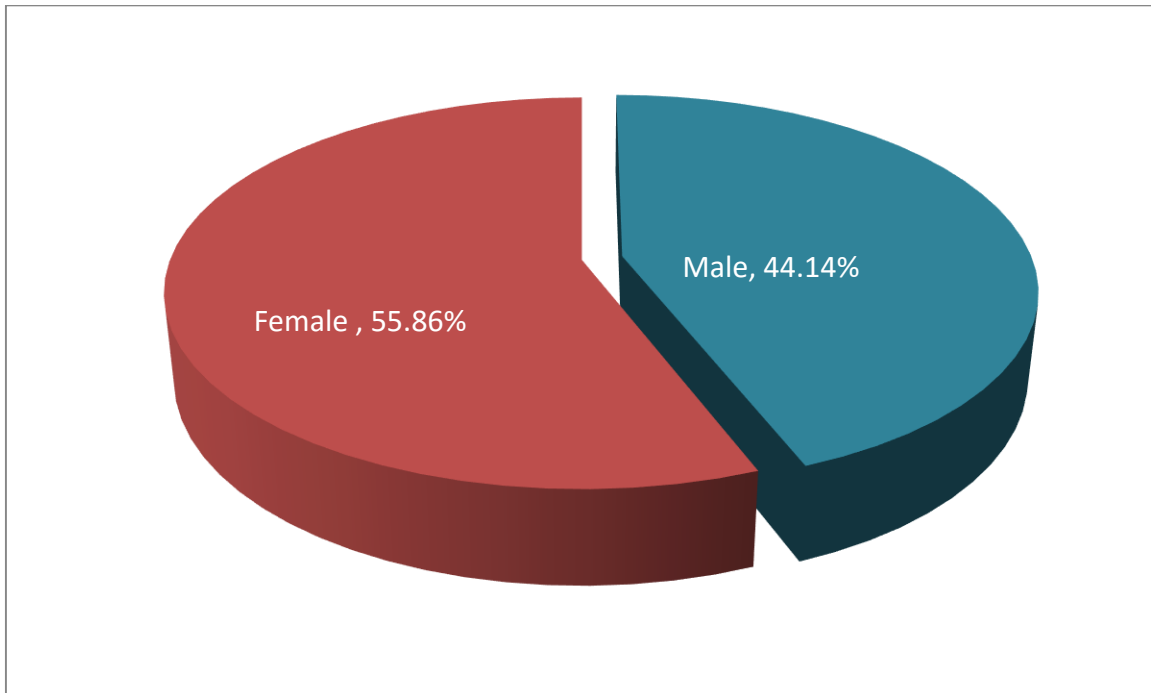
### 3.7. Age of child (who is medicated)



**Figure: 3.7: Age of child in year (%)**

We divided the age range of these children into four categories. Where highest number of children (50.50%) were between 1yr-5yr. Small number of children (0.60%) were below three months.

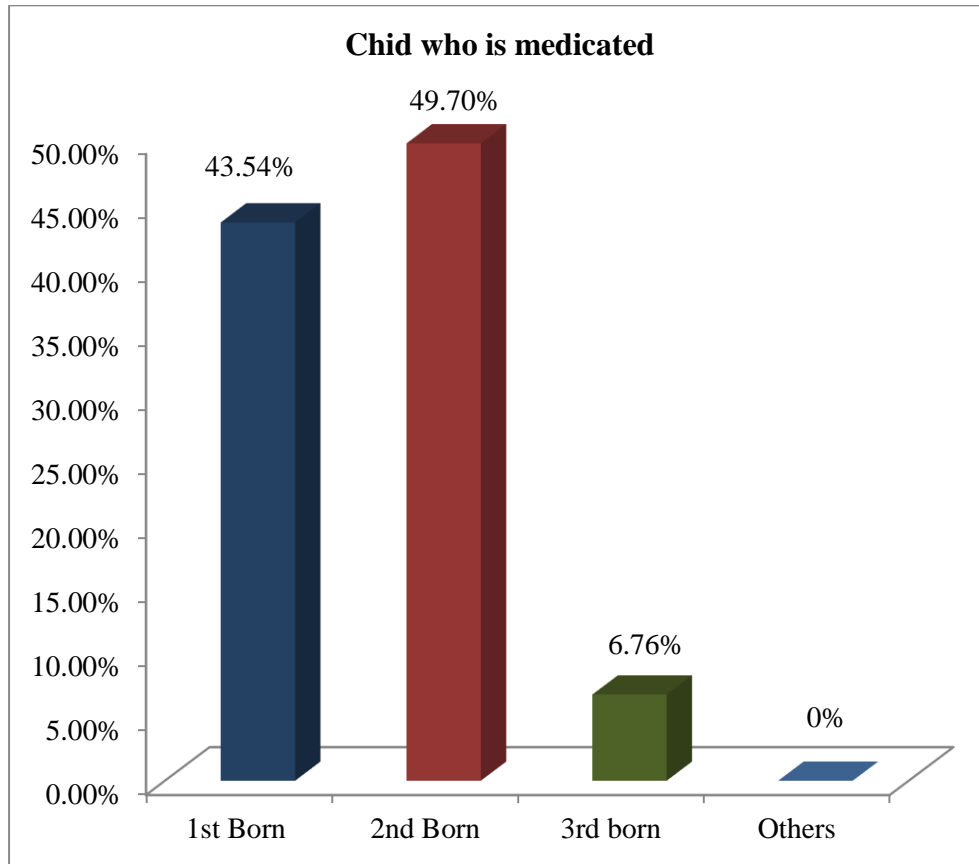
### 3.8. Gender of child



**Figure: 3.8: Gender of child (%)**

Almost equal number of male (44.14%) and female (55.86%) children were treated with medication by the respondents.

## 3.9. Child who is medicated

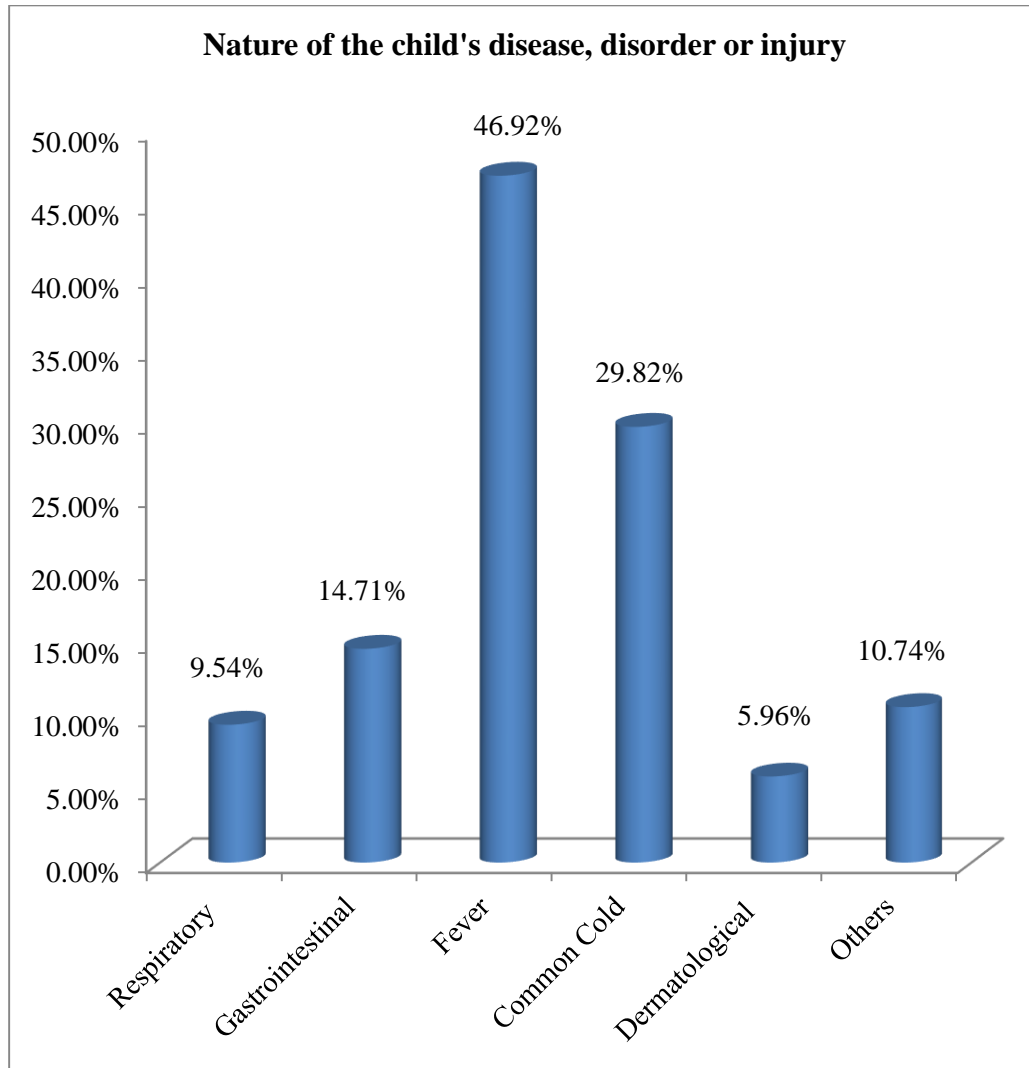


**Figure: 3.8: Child who is medicated (%)**

Mostly first (43.54%) and second born child (49.70%) were medicated.

## Result

### 3.10. The nature of the child's disease, disorder or injury

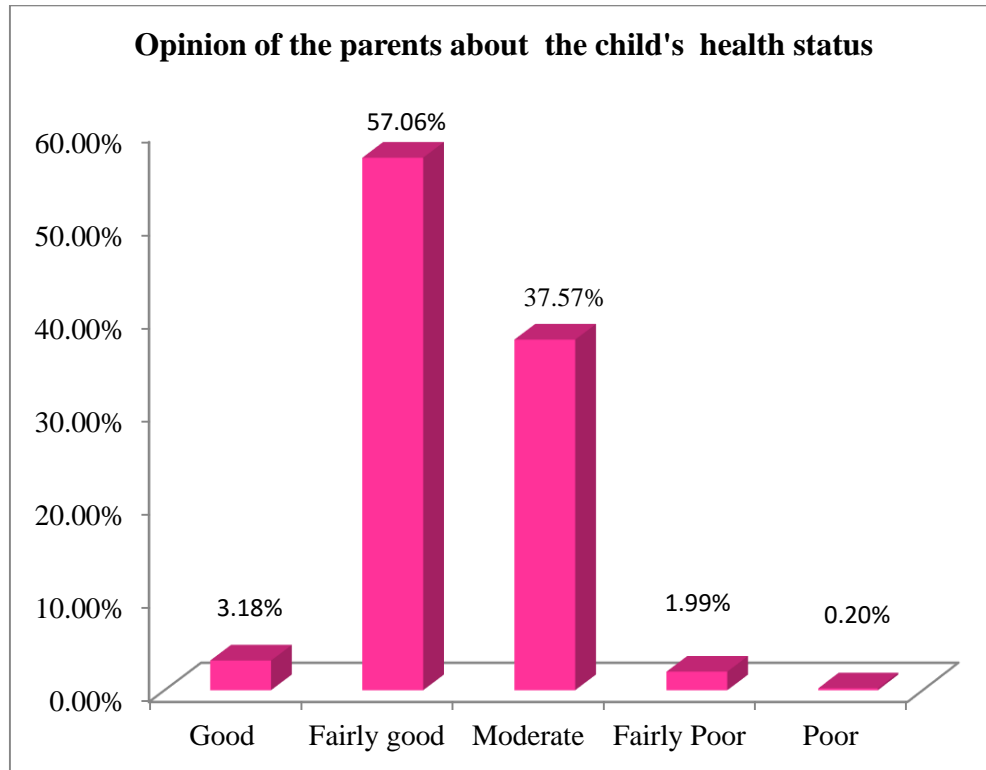


**Figure: 3.10: Nature of disease, disorder or injury (%) of the child**

Most of the children suffered from fever and common cold. Some of them also suffered from respiratory diseases and gastrointestinal distresses. Only a few of the children (5.96%) were medicated for dermatological problem. Others (eye morphologies, typhoid, infection in bladder, pain in throat) also included in found list of disease.

## Result

### 3.11. Opinion of the parents about the health status of the child

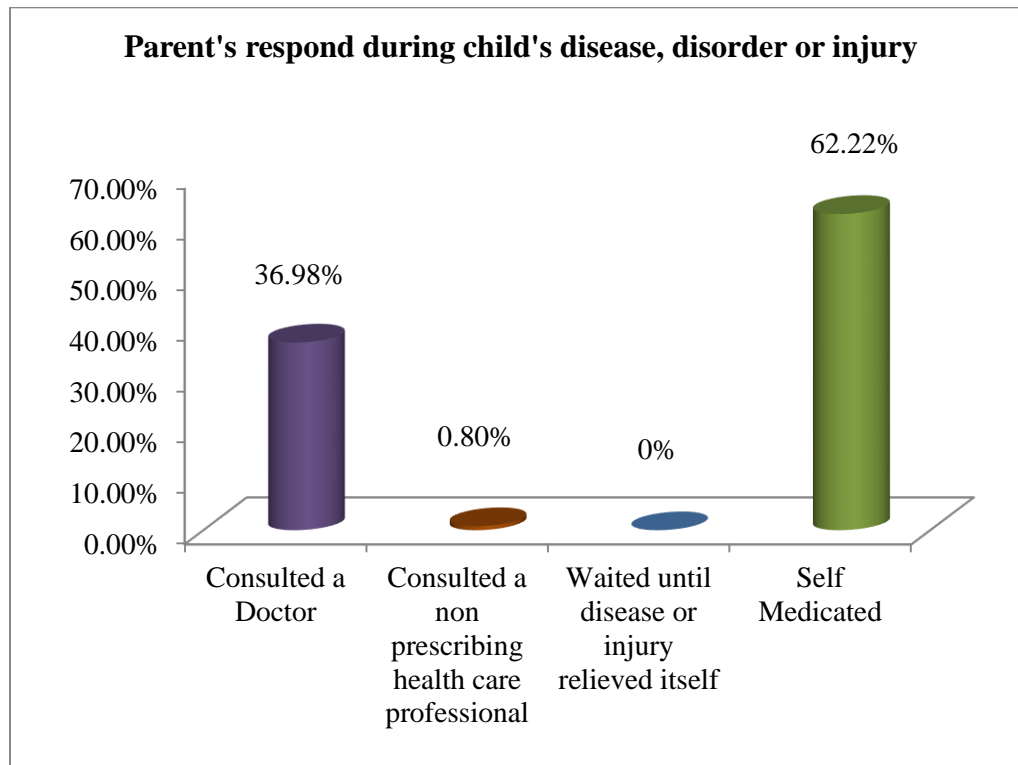


**Figure: 3.11: Opinion of the parents about the health status (%) of the child**

Maximum parents told that about their child health was fairly good (57.06%). Very few parents perceived the condition of the child to be poor (0.20%).

## Result

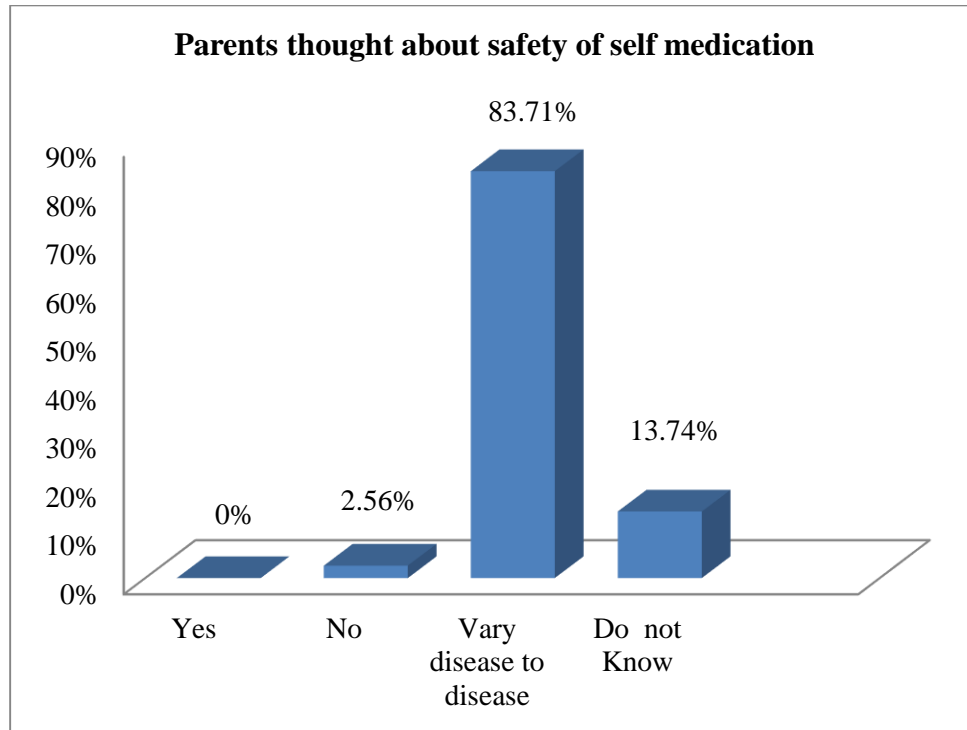
### 3.12. Parent's respond during child's disease, disorder or injury



**Figure: 3.12: Parents' respond (%) when their child suffer from disease, disorder or injury**

Most of the parent self medicated (62.22%) their child when they suffered from any disease, disorder or injury. Significant number of parents (36.98%) consulted doctor. There were no parents who waited until the disease, disorder or injury relieved itself.

### 3.13. Parents thought about safety of self medication

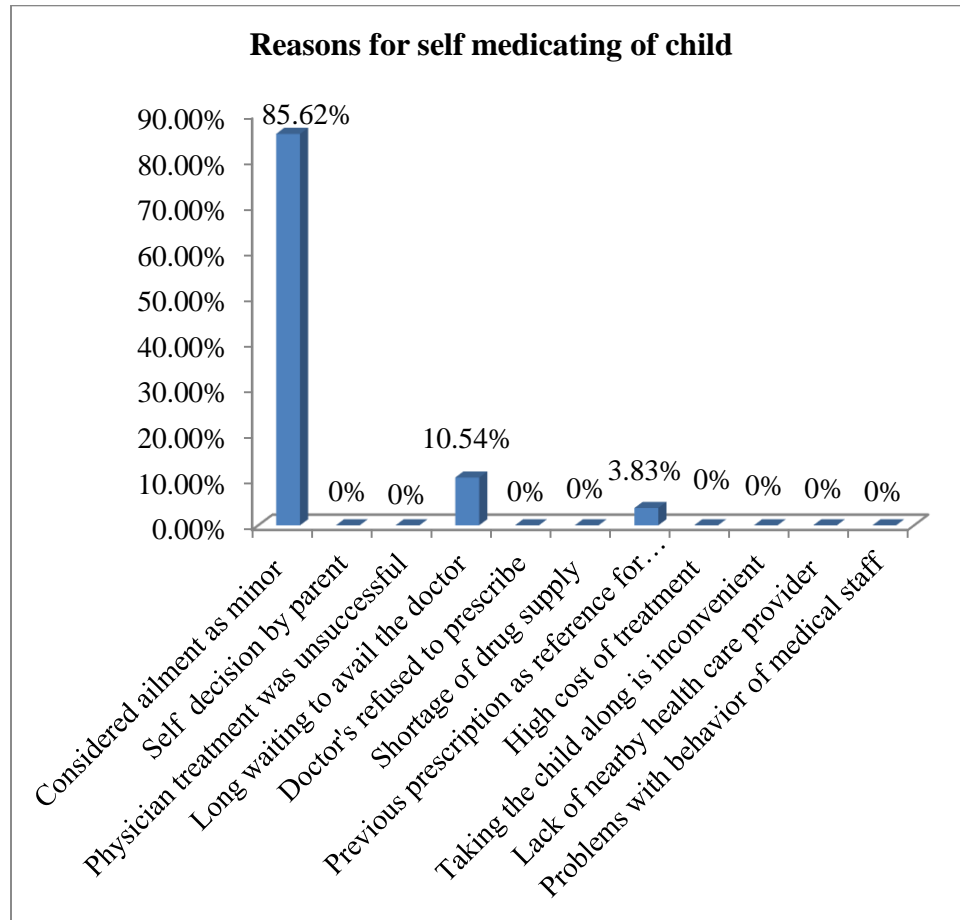


**Figure: 3.13: Parents thought of self medicating safer than receiving medications upon consult or not (%)**

High of parents revealed that, depending on disease type, they weigh the options for self medicating against consulting a doctor. Their response is dependent of the kind of disease their child suffers from. Very few have said self medication is safe and there were also many respondents who had no idea about safety issues.

## Result

### 3.14. Reasons for self medicating of child



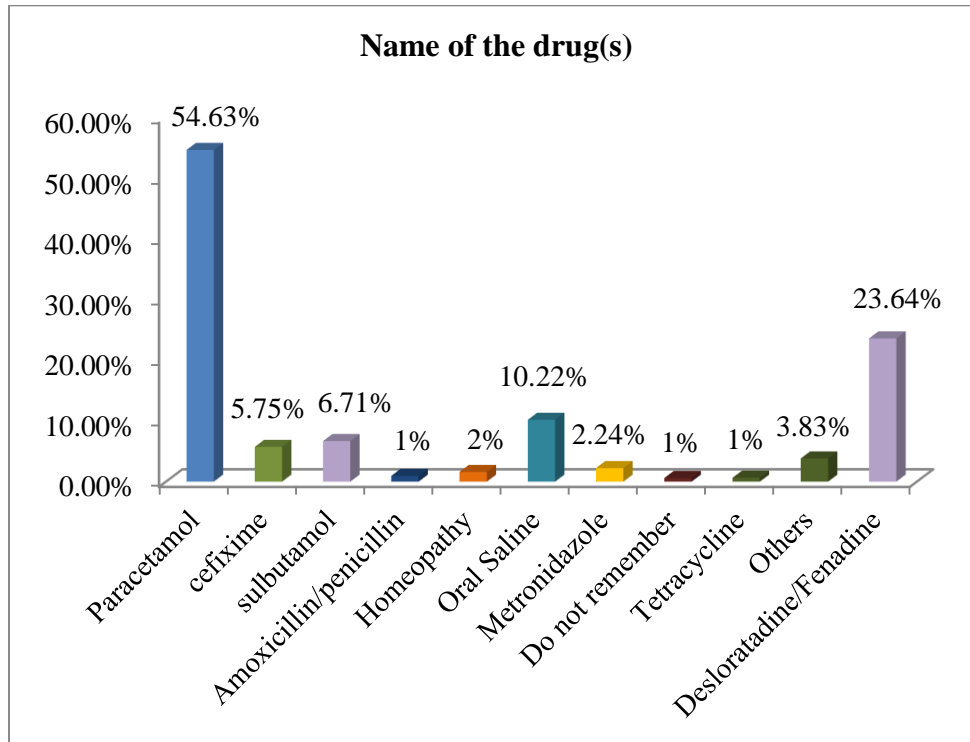
**Figure: 3.14: Reasons for self medication (%)**

Maximum respondent (85.62%) self medicated their child because they considered the disease to be minor and does not require any physician consult. Certain number of respondents(10.54%) self medicated as they could not wait a long time outside the doctor's chamber for the doctor and also as they had previous prescription as a basis for treatment of a familiar ailment. There were no other reasons for self medication that was revealed.



## Result

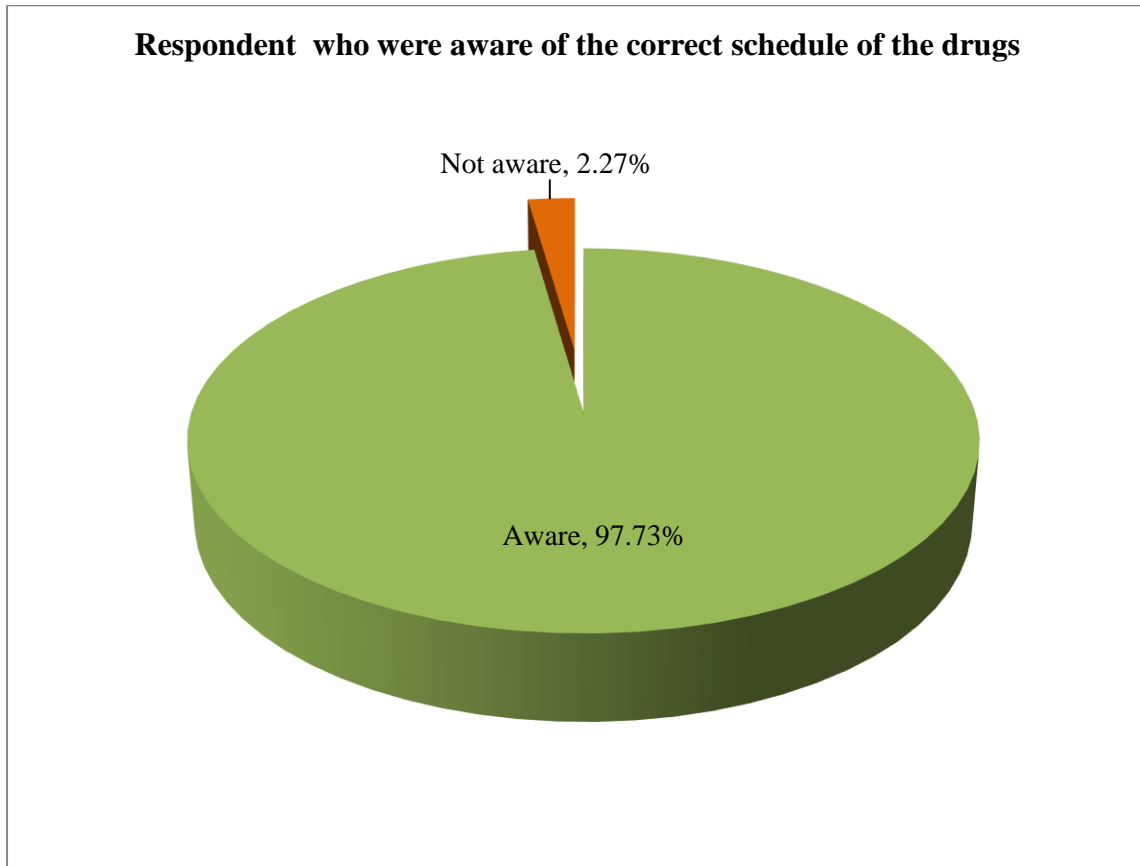
### 3.15. Name of the drug(s) that used in self medication



**Figure: 3.15: Name of the drugs (%) that used in self medication**

Majority of the respondents (54.63%) used paracetamol when they self medicated their children especially in fever cases. Desloratadine or fexofenadine was administered to their child especially in common cold. A few have also self medicated the oral saline especially in diarrhea.

### 3.16. Respondents awareness of the correct schedule for self medicated drugs

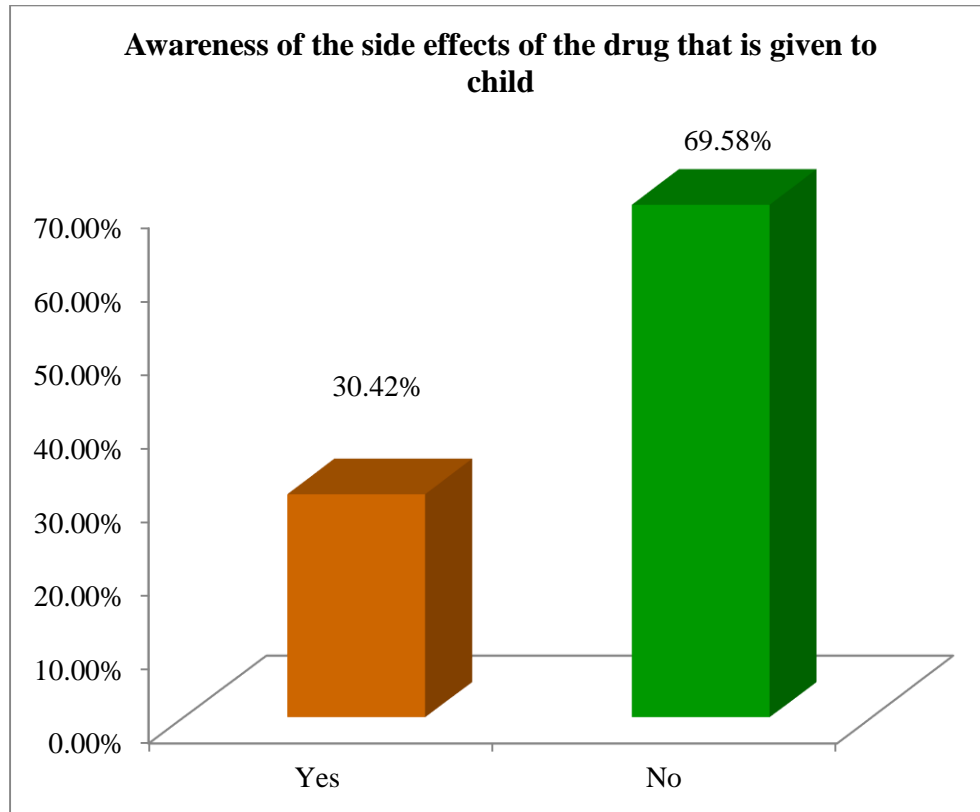


**Figure: 3.16: Respondents (%) aware of the correct schedule for self medicated drugs**

Most of the respondents (97.73%) were aware about the correct schedule for self medicated drugs.

## Result

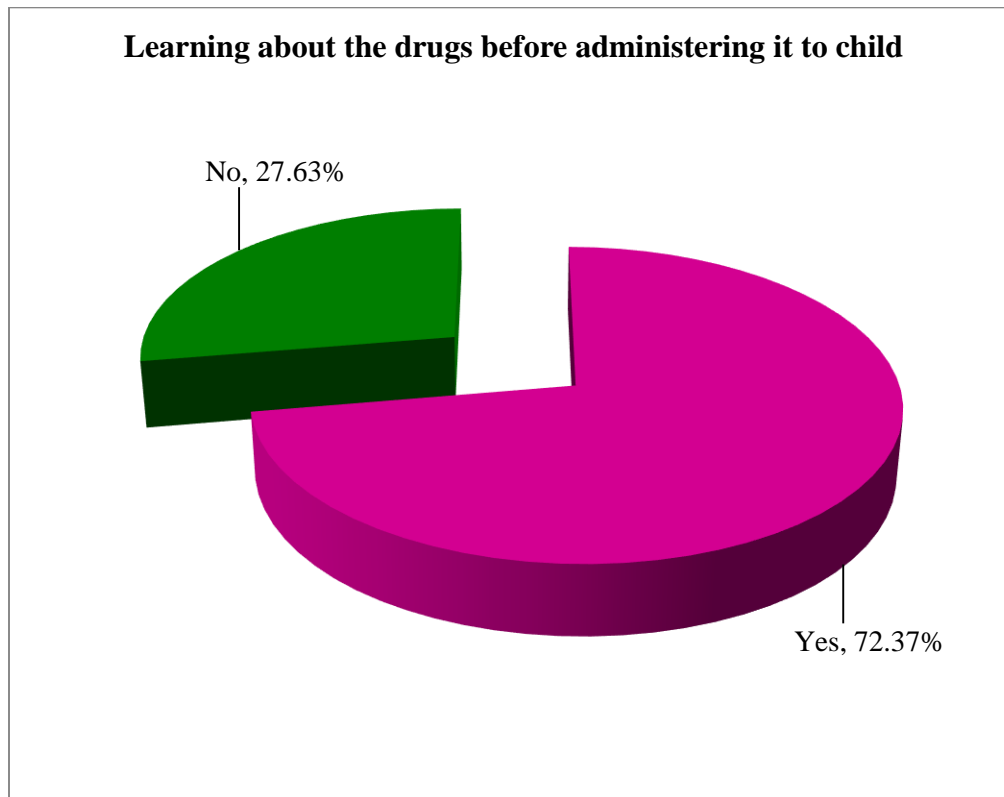
### 3.17. Awareness of the side effects of the drug that is given to child



**Figure: 3.17: Awareness of the side effects (%) of the drug that is given to child**

Most of the respondents (69.58%) were not aware about the side effects of the provided drugs prior to administration. Only a small percentage (30.24%) of respondents knew about the side effects.

### 3.18. Learnt about the drugs before administering it to child

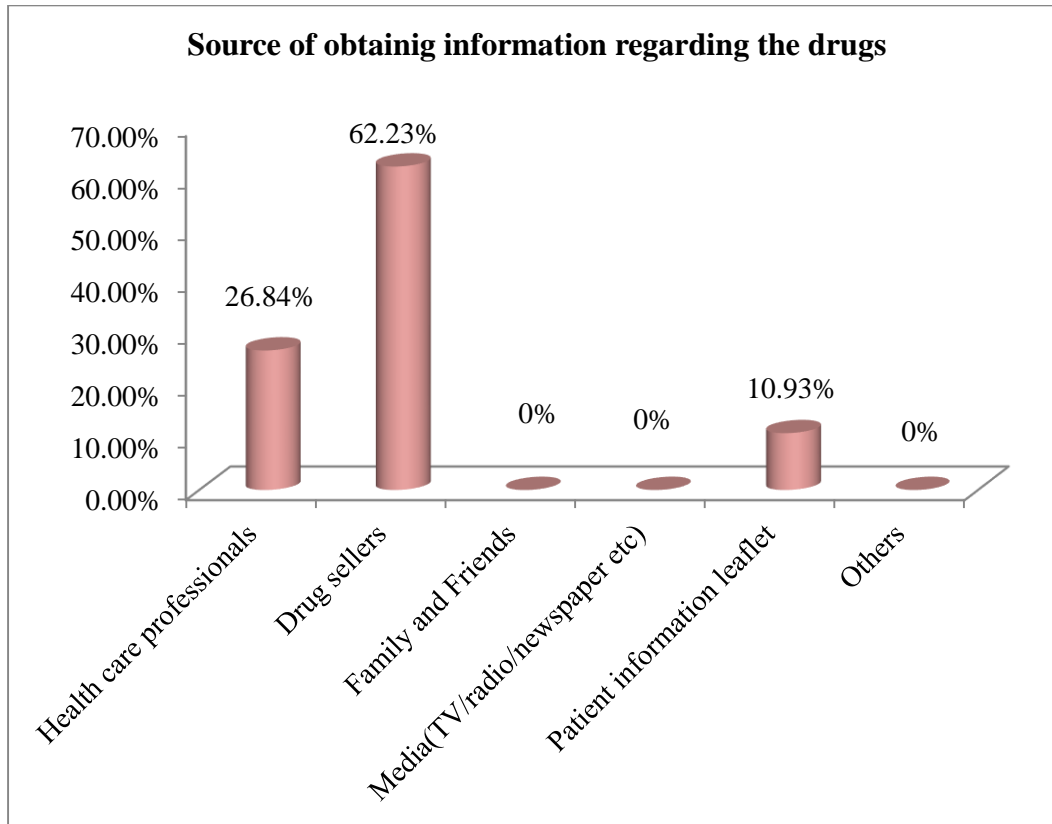


**Figure: 3.18: Learnt about the drugs (%) before administering it**

Majority of the respondents (72.37%) told that they learned about the drugs from various sources before administering it to their child. Rest of the respondents (27.63%) told that they were not learned about the drugs.

## Result

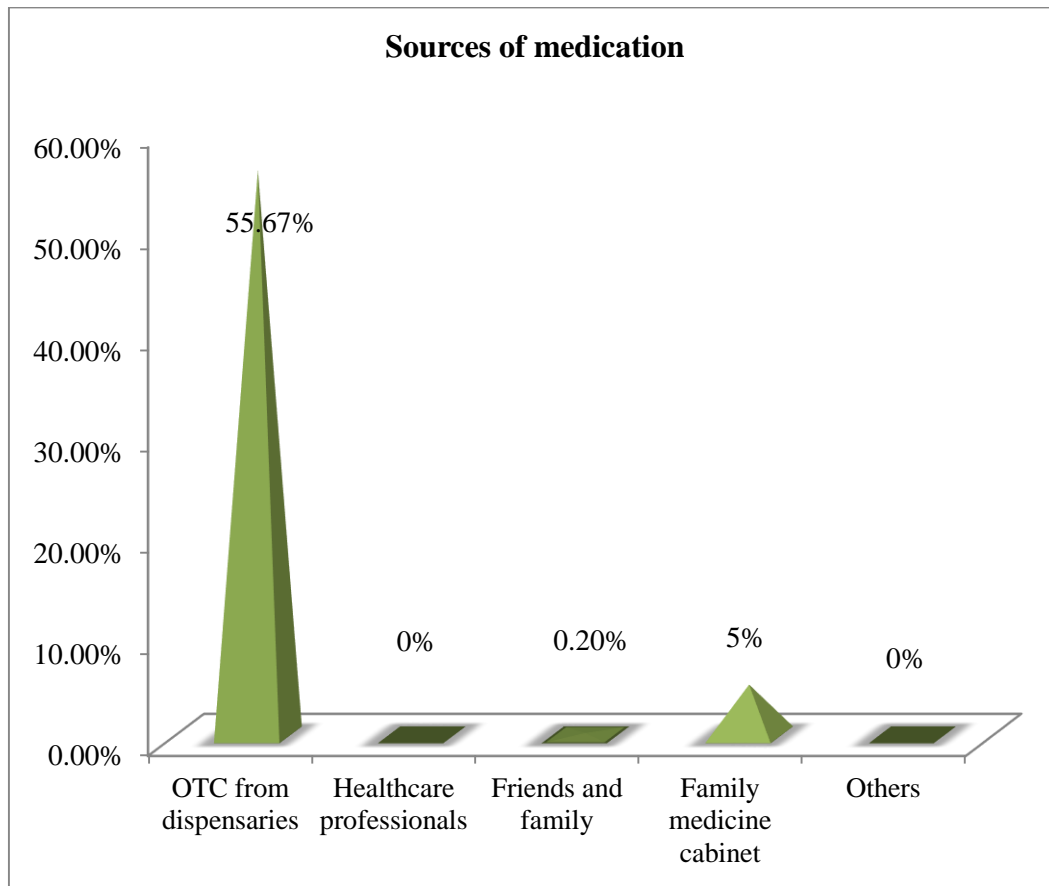
### 3.19. Source of obtaining information regarding the drugs



**Figure: 3.19: Source of obtaining (%) information regarding the drugs**

Main sources of information were personnel at pharmacy dispensaries and acquainted or visited health care professionals. There were a certain (10.93%) who read the patient information leaflet provided as package insert for basic information.

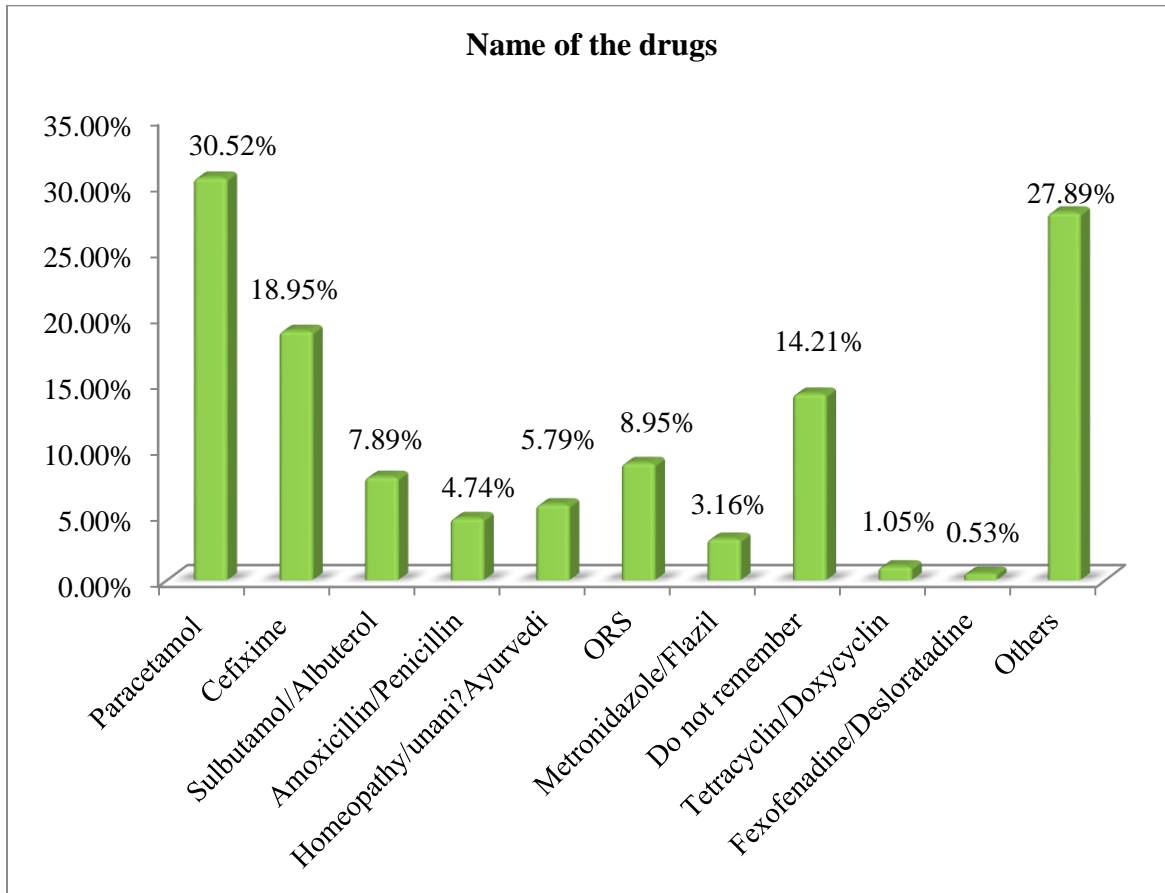
## 3.20. Sources of medication



**Figure: 3.20: Sources of medication (%) during the self medication**

Majority of the respondents (55.67%) got the medications from the dispensaries. Very few respondents (0.20%) got the drugs from friends and family.

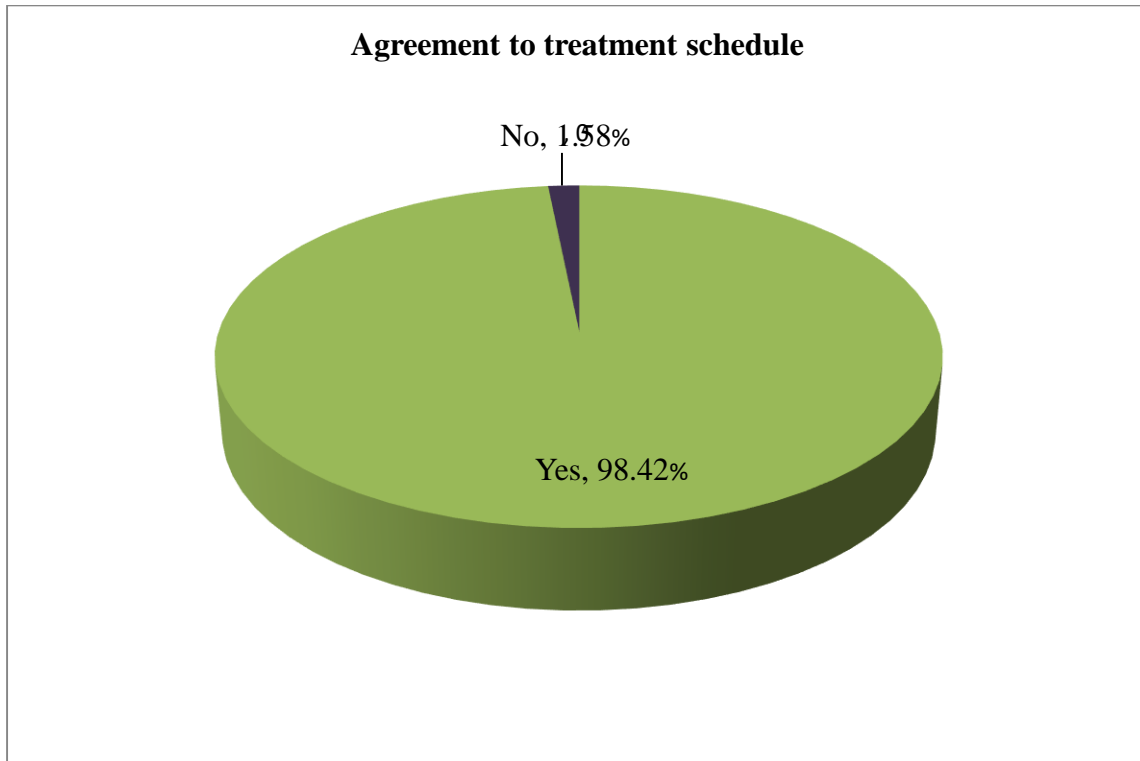
### 3.21. Name of the drugs prescribed for child



**Figure: 3.21: Name of the drugs prescribed for child (%)**

High frequency prescription drugs included paracetamol, antibiotics (cefixime, amoxicillin, metronidazole, tetracycline), ORS and bronchodilators. Many other drugs have also been prescribed, such as doxtrim, tofen, alben, chlorpheniramine, chloramphenicol, renetidine, flunarizine are in a significant percent. Many of the respondents (14.21%) have been unable to name the drug at the time when the survey was conducted.

### 3.22. Agreement to treatment schedule

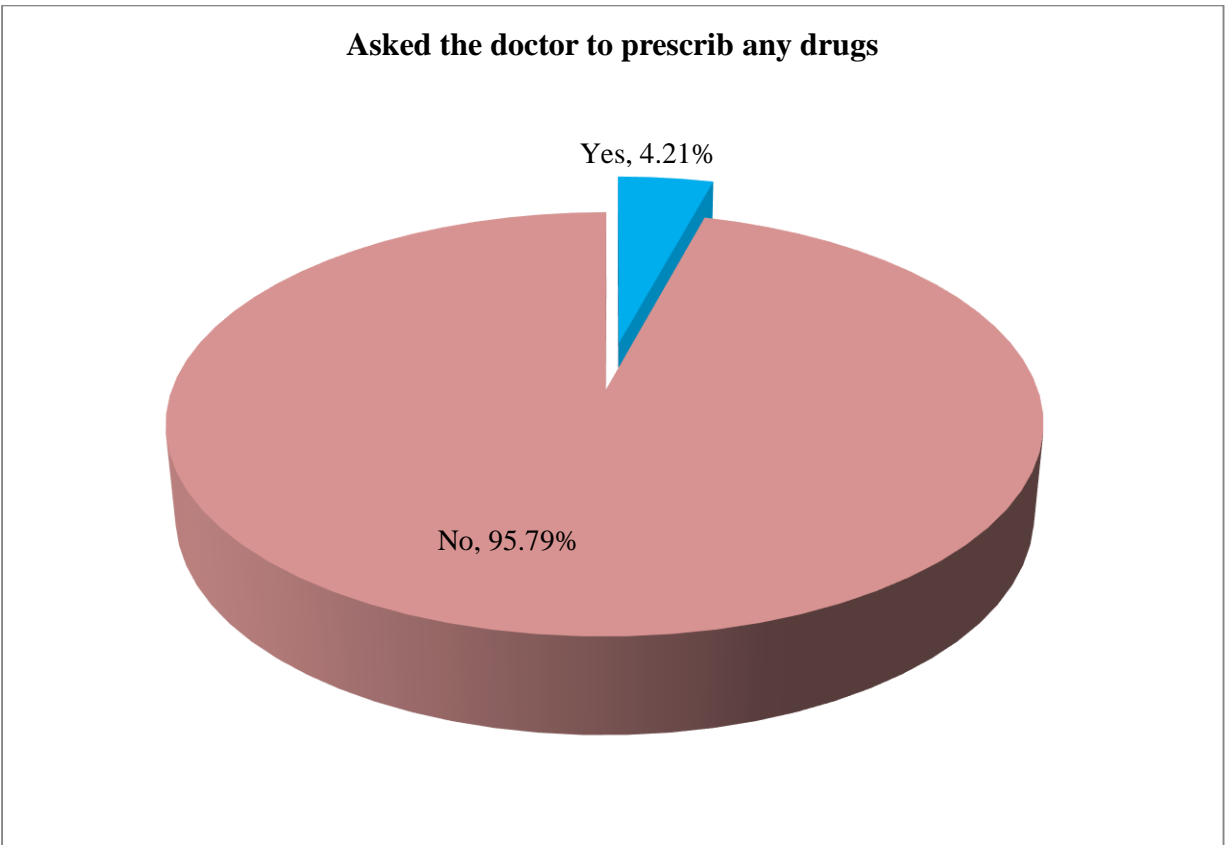


**Figure: 3.22: Agreement to treatment schedule (%) provided by the physician**

A small (1.58%) did not agree with the treatment schedule but the rest (98.42%) were more agreeable.



### 3.23. Asked the doctor to prescribe any drugs

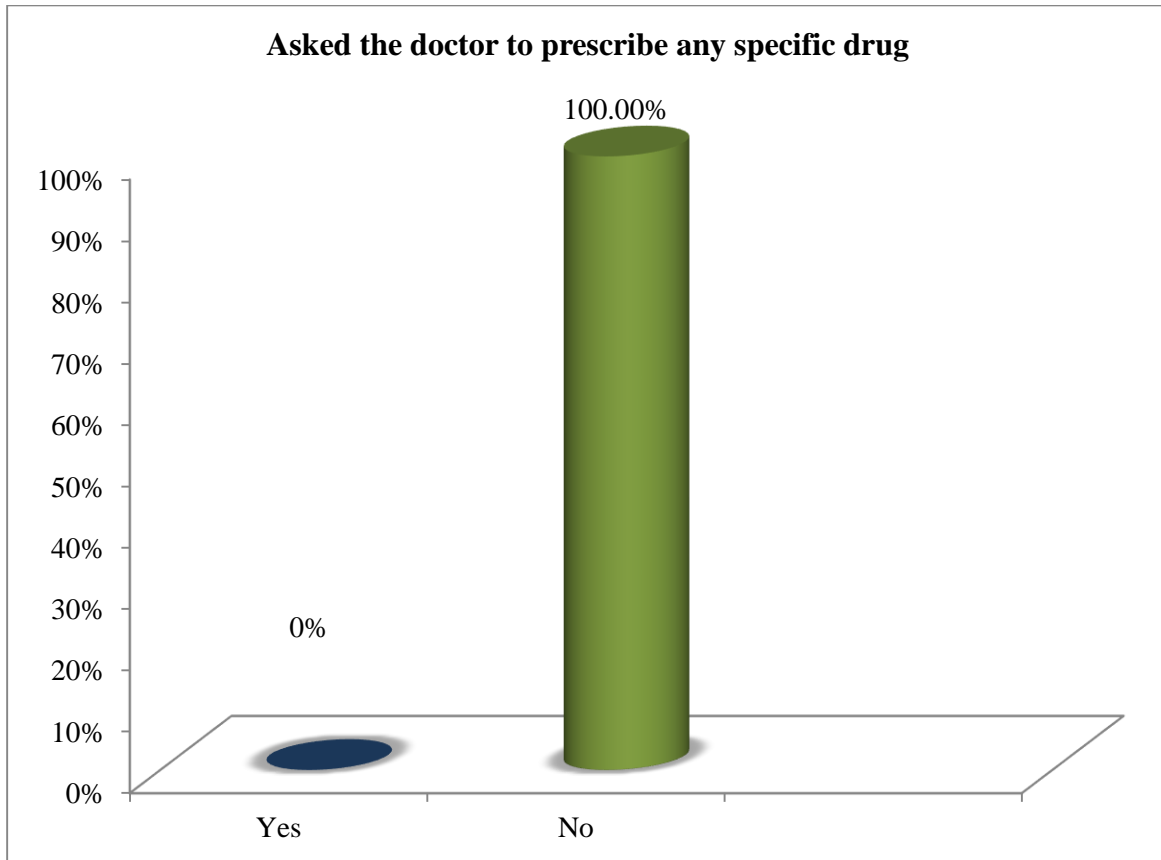


**Figure: 3.23: Asked the doctor to prescribe any drugs (%) for child**

Small percent requested the doctor to prescribe drugs for their child's quick recovery. Majority (95.79%) had no opinion.

## Result

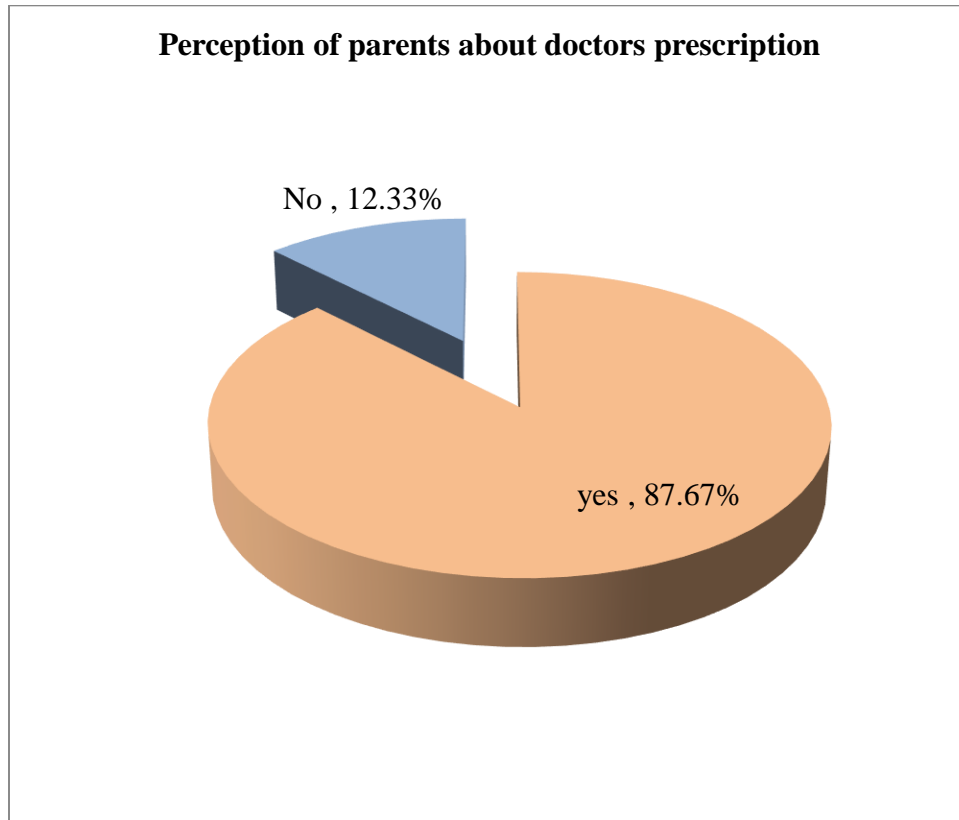
### 3.24. Asked the doctor to prescribe any specific drug



**Figure: 3.24: Asked the doctor to prescribe any specific drug (%) for child**

None of the respondents asked for any specific drug.

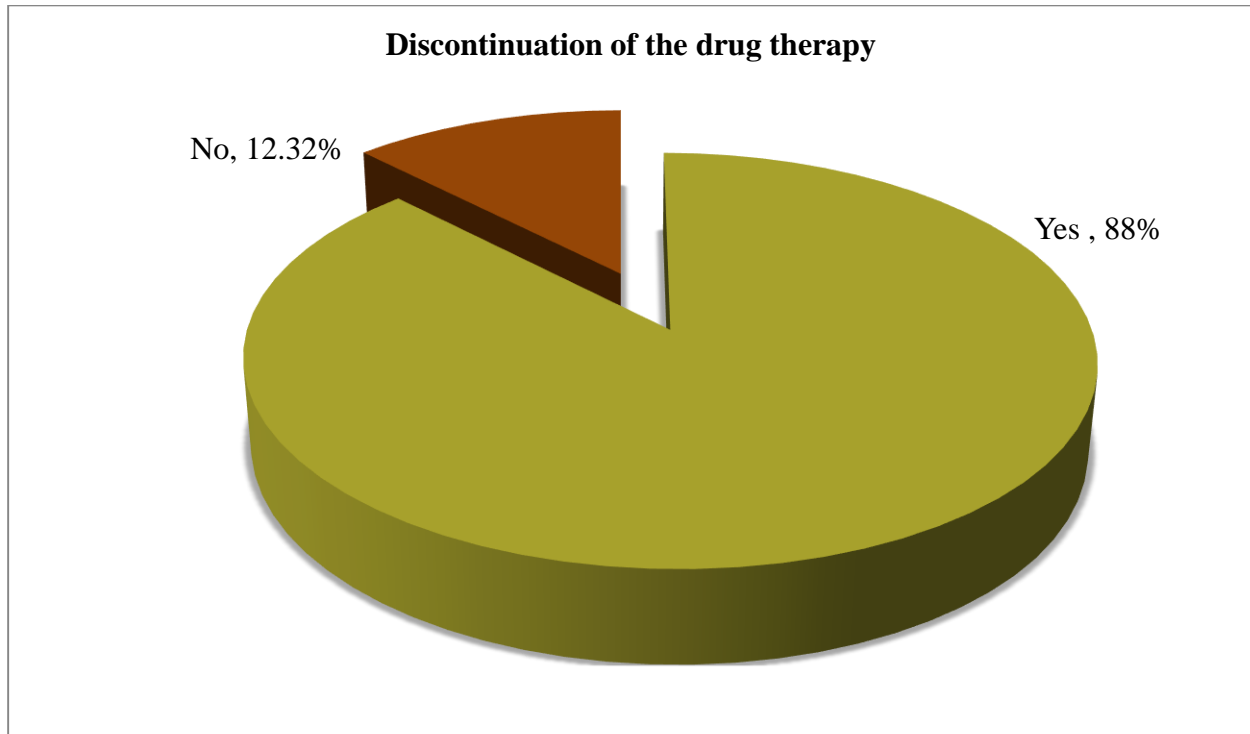
### 3.25. Perception of parents about doctors prescribed drugs



**Figure: 3.25: Perception of parents about doctors prescribed drugs**

Most of the parents (87.67%) thought doctors prescribed drugs to children too easily.

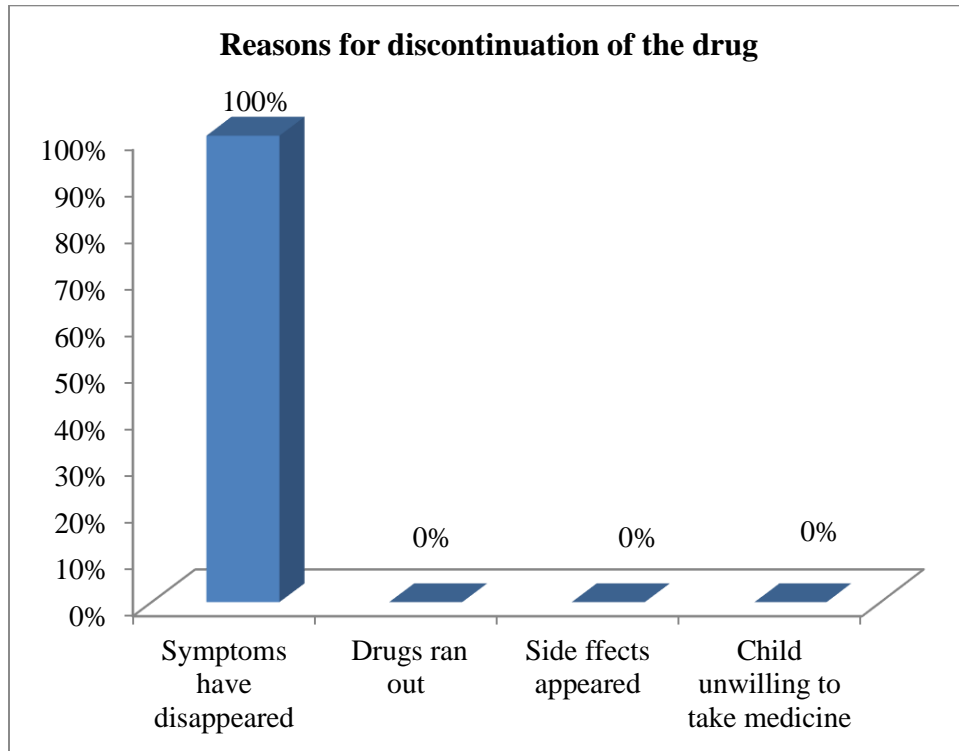
### 3.26. Discontinuation of the drug therapy



**Figure: 3.26: Discontinuation of the drug therapy (%) before the standard length**

Majority of the respondents (88%) discontinued the drug therapy before the standard length of therapy. On the other hand a certain number of respondents (12.32%) maintain the standard length of therapy.

### 3.27. Reasons for discontinuation of the drug

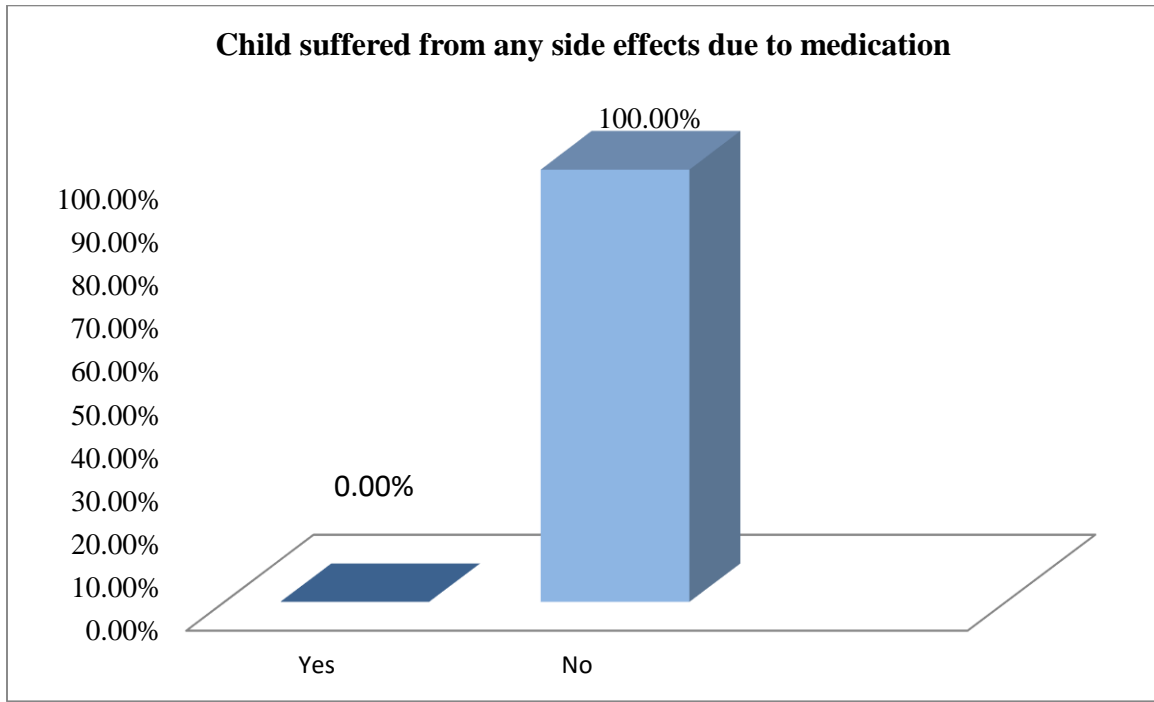


**Figure: 3.27: Reasons for discontinuation of the drug (%)**

All respondents (100%) discontinued the drugs for their children when their symptoms have disappeared.

## Result

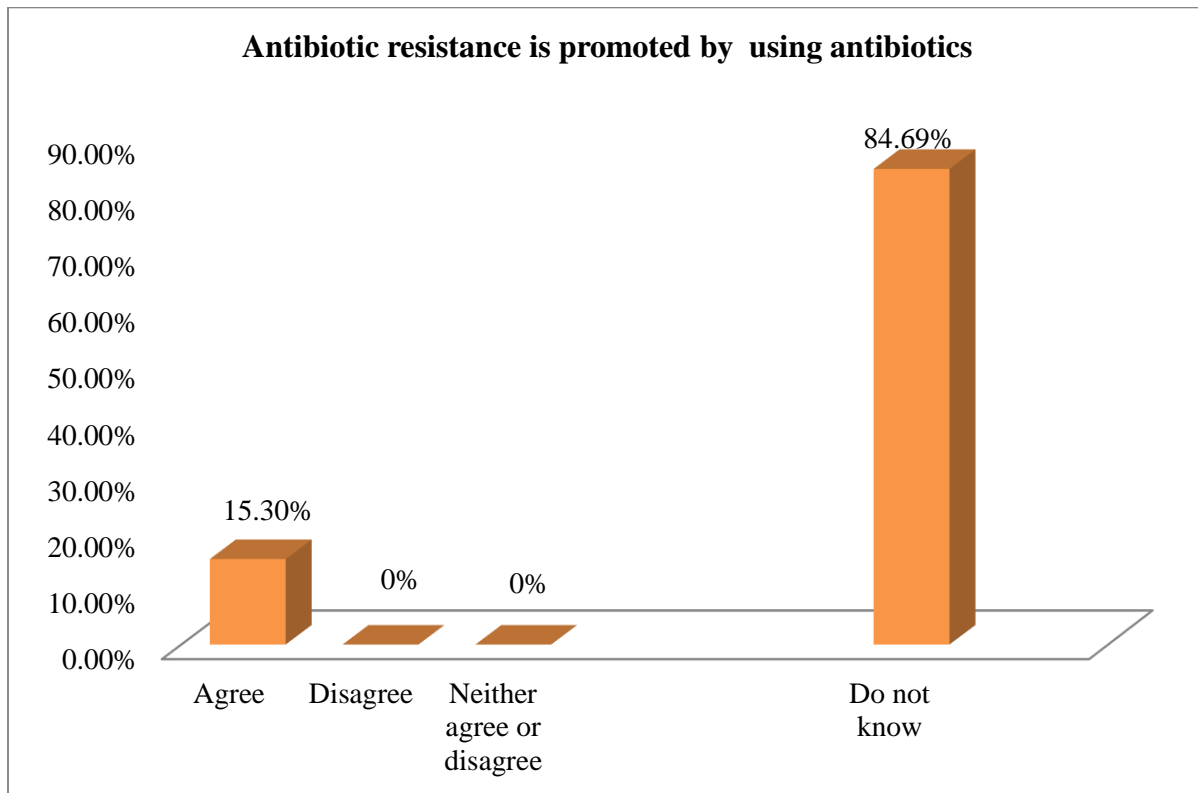
### 3.28. Child suffered from any side effects due to medication



**Figure: 3.28: Child suffered from any side effects (%) due to the use of medication**

No child suffered from any side effect.

### 3.29. Antibiotic resistance is promoted by using antibiotics

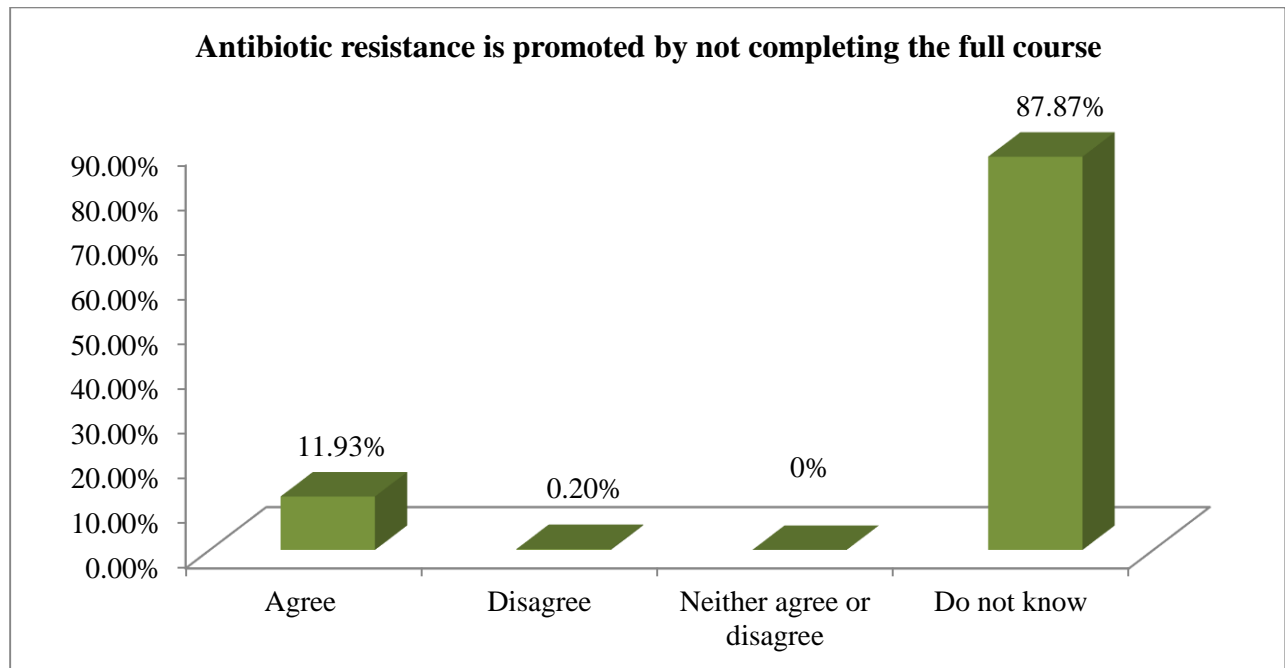


**Figure: 3.29: Antibiotic resistance is promoted by using self medication (%).**

Maximum respondents (84.69%) did not know that antibiotic resistance is promoted by using antibiotics when they are not needed. A minor number of respondents (15.30%) agreed with that status.

## Result

### 3.30. Antibiotic resistance is promoted by not completing the full course



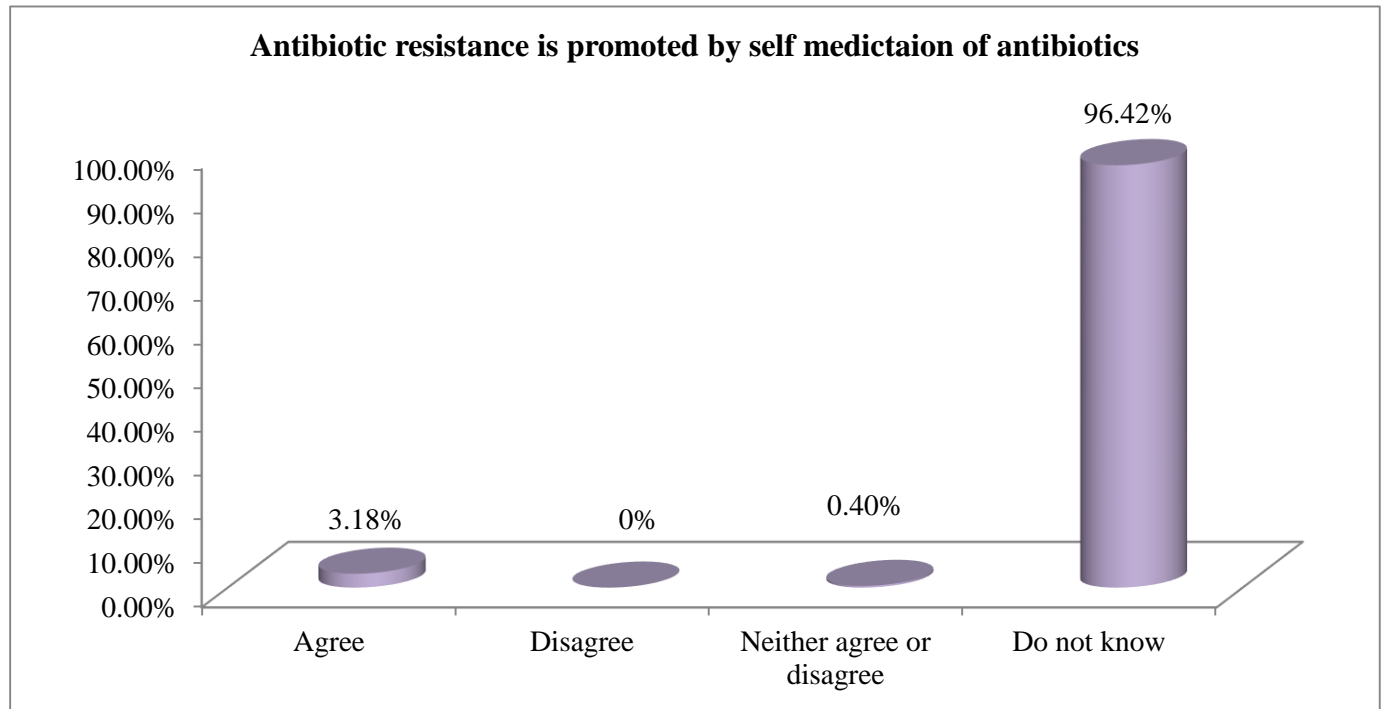
**Figure: 3.30: Antibiotic resistance is promoted by not completing the full course of antibiotics (%)**

Majority of the respondents (87.78%) were unaware that antibiotic resistance is promoted by discontinuation of full regimen.



## Result

### 3.31. Antibiotic resistance is promoted by self medication of antibiotics

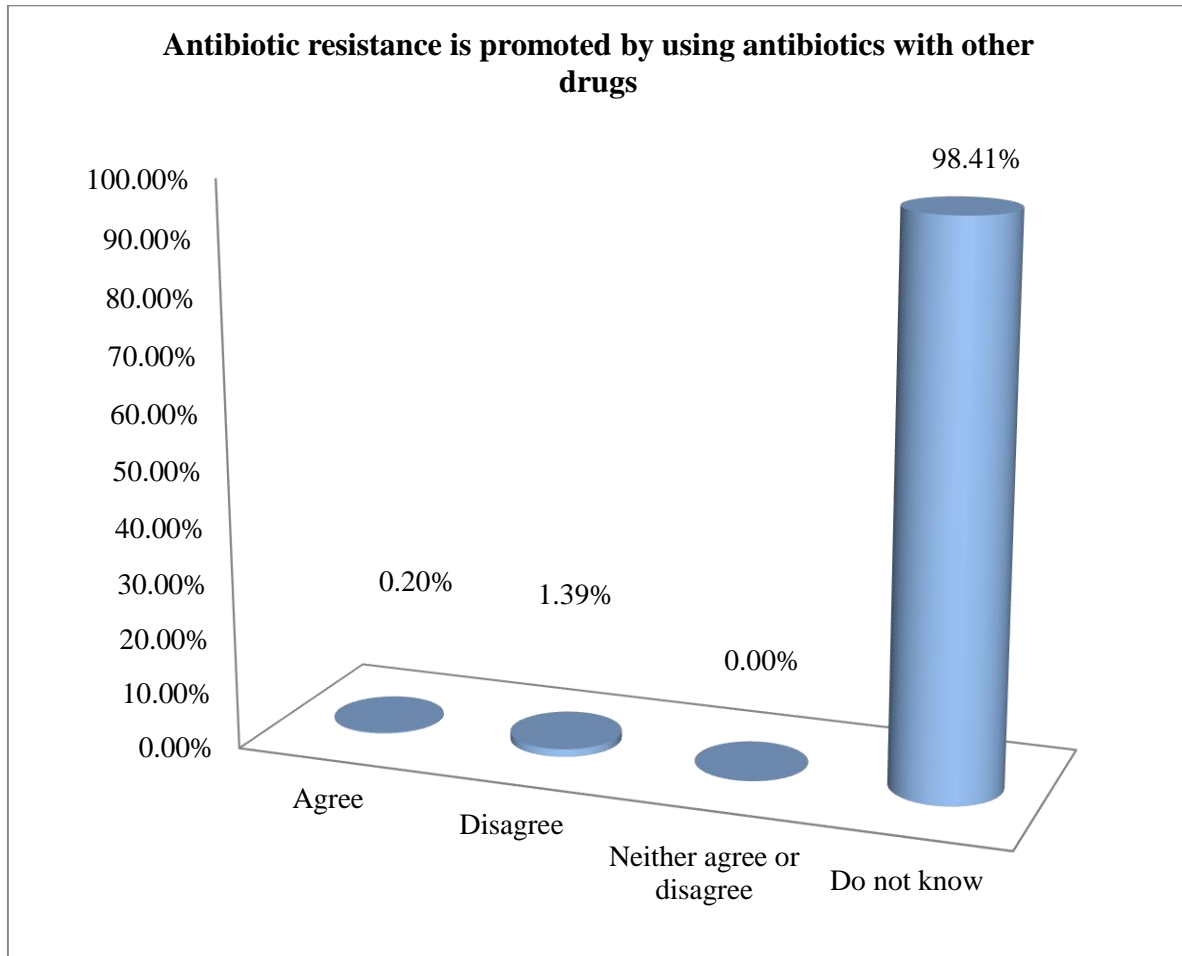


**Figure: 3.31: Antibiotic resistance is promoted by self medication of antibiotics**

Majority of the respondents (96.42%) did not know that antibiotic resistance is promoted by self medication of antibiotics where agreed only (3.18%) that antibiotic resistance is promoted by self medication of antibiotics.

## Result

### 3.32. Antibiotic resistance is promoted by using antibiotics with other drugs

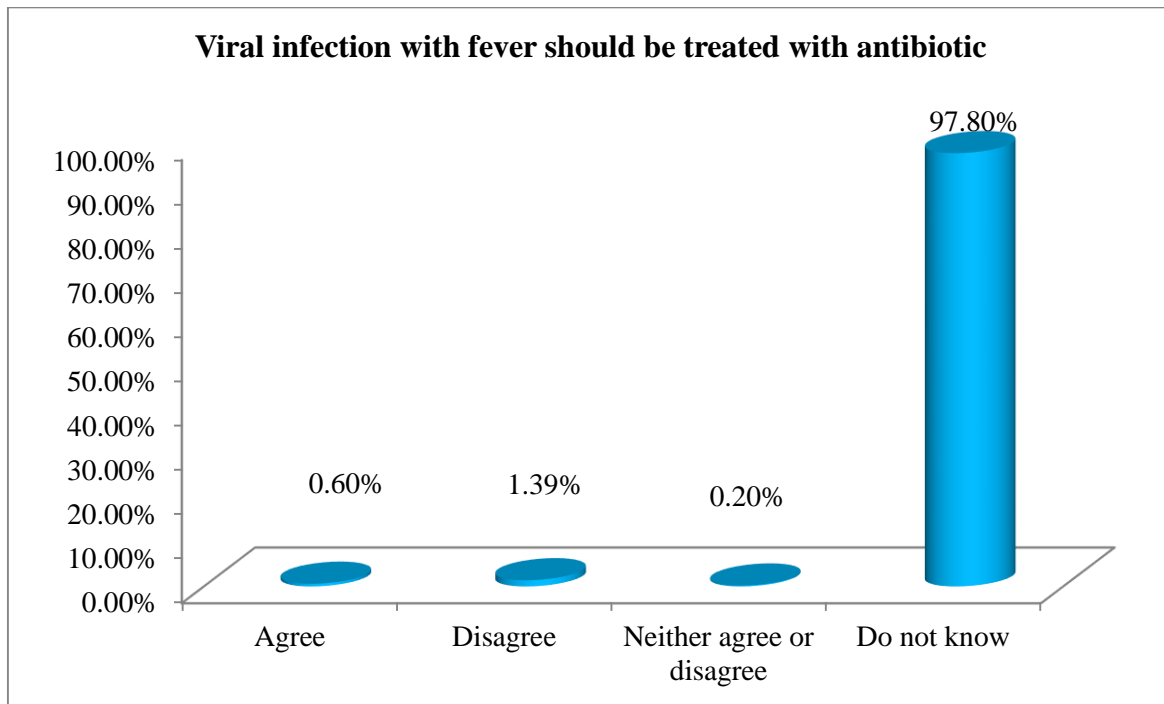


**Figure: 3.32: Antibiotic resistance is promoted by using antibiotics with other drugs (%)**

Maximum respondents (98.41%) did not know about the status only a certain number of respondents (0.20%) agreed that antibiotic resistance is promoted by using with other drugs.

## Result

### 3.33. Viral infection with fever should be treated with antibiotics

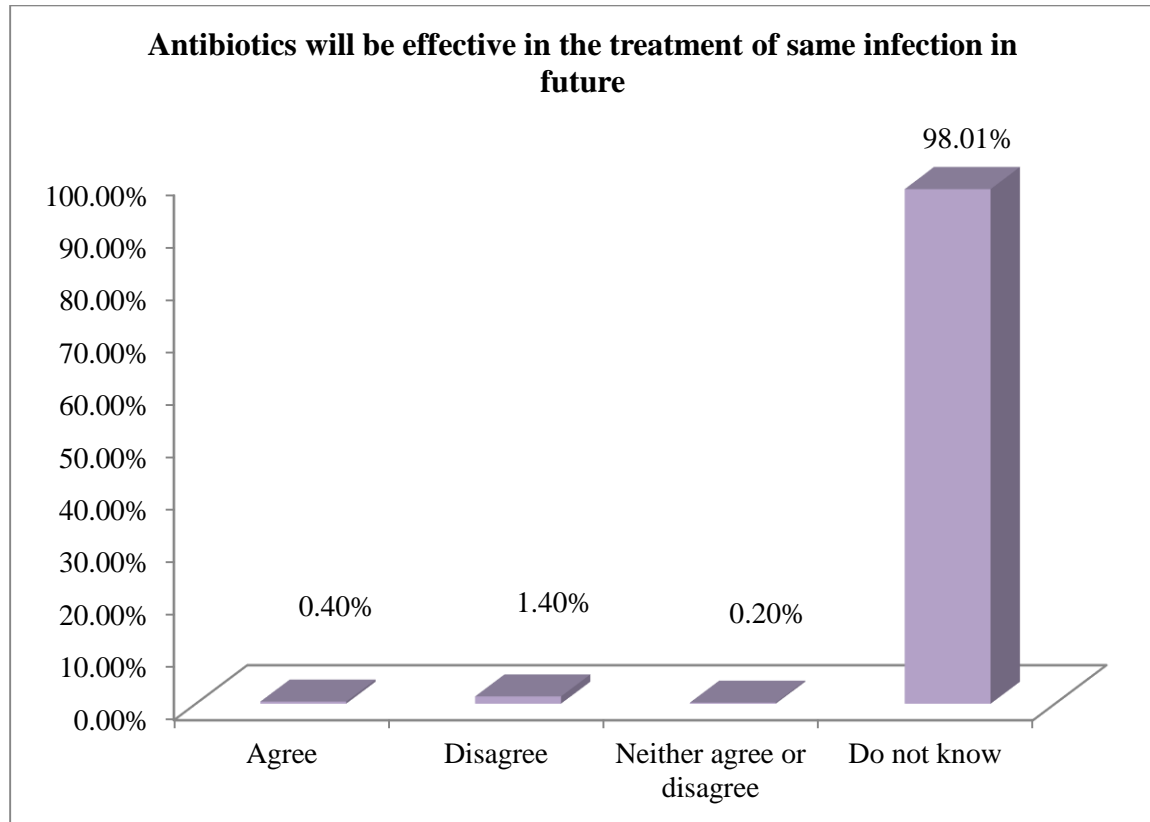


**Figure: 3.33: Viral infection with fever treated with antibiotic (%)**

Small (0.60%) of respondent who agreed that viral infection can be treated with antibiotic. Majority had no idea about the mechanism of action or the target of action.

## Result

### 3.34. Antibiotics will be effective in the treatment of same infection in future



**Figure: 3.34: Antibiotics will be effective in the treatment of same infection in future (%)**

Majority of the respondents (98.01%) did not know that antibiotic will always be effective in the treatment of same infection in future. Certain number of respondents (0.40%) agreed that antibiotic will be effective in the treatment of same infection in future.

# CHAPTER FOUR

## DISCUSSION AND CONCLUSION

## Discussion and Conclusion

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### 4.1 Discussion and conclusion

Self medication is the selection and use of non-prescription medicines by individuals. The types, extent and reasons for self medication can vary from country to country which might be due to study methodologies utilized and also the different socioeconomic and socio-demographic factors.

Our study focused on the prevalence and pattern of self medication on children practices in Dhaka city. Questionnaire was filled up with the parents of the children. Maximum of them in high school level, class 12 equivalent (36.18%), minimum completed their graduation.

Most of the respondents were homemaker (51.29%). we divided the income range into five categories. Maximum family income level of the family is in the TK 10000-30000 range. we found that maximum family was middle class family with containing 1 or 2 children which was in large (83.39%). Those who have a healthy family income have the tendency to buy medicine over the counter.

We collected the data for the child who could suffer from disease, disorder or injury in the past 6 month. We found that in most cases child was 1<sup>st</sup> or 2<sup>nd</sup> born (93.95%). For our convenient to study we divided the age range in four categories. A large number of children were in 1yr to 5 yr range which was 50.50%. There was little number (0.60%) of children in the age group of less than 3 months. We found the children in the 3months-1yr which was 14.70%. There were the children in the 5yr-12yr age range (34.20%).

It was found that maximum children were suffered from fever (46.92%) and common cold (29.82%). 14.71% of the children were suffered from gastrointestinal problem which include diarrhea, constipation, gastric problem, intestinal helminthes, vomiting. A significant portion (5.96%) of the children were suffered from dermatological problem like red rash, itching. There were 10.74% children who suffered from various diseases like typhoid fever, seizure, headache, infection in rectum, tonsillitis, pneumonia, eye morphogenesis. Very little of them have cancer also (liver cancer, bone marrow cancer). For health problems like headache, fever, common cold most of the respondents self medicated their children because they thought this kind of health issues as normal ones.

## Discussion and Conclusion

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Most of the parents told about their child health were fairly good (57.06%). Parent wanted that their children should have good health. Significant number of children had moderate health (37.57%) condition. 3.18% of children had good health according to their parents. A little number of children contain fairly poor (1.99%) and poor (0.20%) health.

We found that from the survey most of the parents self medicated their child (62.22%) rather than consulting doctor (36.98%). As in most cases fever was the common problem so they thought that it was minor. But in reality sometimes fever is the symptom in many diseases which need consultation with the doctors. Otherwise it will be late for treatment. A small percent (0.80%) of respondents with non prescribing health care professional but for our convenient to the study we counted them with the prescribed doctors. Non prescribing health care professional include homeopathy doctors.

Maximum parents self medicated their children by considering the illness (83.71%) type as it is serious or not. 13.74% of the respondents do not know as the self medication is safer than receiving medications upon consult. Only 2.56% of the respondents told that self medication is not safe but they self medicated their children as they wanted to the better condition at that times.

A large number of respondents (85.62%) self medicated their child as they thought that disease was minor. 10.54% did not want to wait a long time for the doctors. Certain number of respondents (3.83%) took the help of the previous prescription when same disease again appeared. There were no other reasons for self medication that revealed by the parents.

The respondents use following drugs for self medication such as Paracetamol, desloratadine/fexofenadine, oral saline, cefixime, metronidazole, tetracycline, lower number of penicillin, alben, chloramphenicol. Sometimes they also gave the homeopathy medicines to their child. A small number (1%) of respondents did not remember the name of the drugs. These drugs were used for preventing the following health problems like fever, diarrhea, headache, cold, cough, eye problem, rash, anorexia. The results of the investigation shows that paracetamol (54.63%) was the maximum using drug for self medication but it is in very risky for taking paracetamol without consult in frequent cases cause overdose may be caused a fatal condition or liver damage. Antibiotic used without consult can cause antibiotic resistance.

## Discussion and Conclusion

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Maximum respondents aware (97.73%) about the treatment schedule of the medicine they self medicated their child. But many of them were not sure of the dose regimen as they forgot about the regimen that given 2 months ago for the disease.

Most of the parents did not know (69.58%) the side effect of the drug they self medicated. It can be caused great hamper of the health of the children.

Majority of the respondents (72.37%) learned about the drugs before administering it. Sometimes they consider the learn mean knew about the treatment schedule.

The biggest source of drugs for self-medication for students was the local dispensaries (55.67%). It appeared there was no restriction in selling non prescribed drug in our country. Now there were easy excess to pharmacies and people easily get information from sources and purchase drug from nearby dispensaries. Some respondents also got the medicines from family medicines cabinet, friends and family.

Sources of information for the maximum respondents were drug sellers (62.23%) as self medicated to child. They also got information from the health care professionals (26.84%) when they consulting doctors. They also obtained the information from the patient information leaflet or package insert after buying the medicines.

During consulted doctors most of the doctors prescribed the paracetamol (30.52%) for the children in fever. Tetracycline/ doxycycline also provided by the doctors for the diarrhea. Lower income family or slum area parents had the tendency to take the homeopathy medicines. They also had lower knowledge about self medication. Oral saline, sulbutamol, penicillin/amoxicillin also provided by the doctors to treat the diarrhea, pneumoniae, asthma. or many others respiratory disease like short breath. For many dermatological problem they also provided many medicines like hydrocortison cream, antibiotic.

In our country people believe on doctors so much. So Maximum parents was (98.42%) easily agreed with the treatment schedule provided by the doctors. There was another reason to follow the schedule that the children got cure from the disease after the medicine taking that provided by the doctors. But a small number of parents (1.58%) did not agree with the treatment schedule as they thought that doctors sometimes provided unnecessary medicines which were not needed.



## Discussion and Conclusion

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Sometimes their children did not cure after taking the medicines. So they disagreed with the treatment schedule about the doctors.

Large number of respondents (95.79%) did not ask the doctor to prescribe any drugs as they agreed with the doctor's prescription. Some of them did not know about the drugs so much. 4.21% respondents asked the doctors to prescribe vitamin, calcium because they thought that their children were weak or health was not good.

All of the respondents did not ask the doctors to prescribe any specific drugs as they did not know so much about drugs. They completely trusted on the doctors.

Most of the respondents (87.67%) thought that doctors administered drugs too easily even in which drug could be avoided. They thought that they provided these medicines for their business. A little number of respondents (12.33%) thought their doctors did not prescribe drug too easily as they gave only one or two medicines for the disease and they thought it was appropriate.

Majority of the respondents (88%) did not discontinue the drug therapy prior to standard length of therapy. They maintain the duration that provided by the doctors as they wanted their child completely recovered from the disease. Some of the respondents (12.32%) told that they discontinue the therapy length as the symptoms disappeared. They also thought that after disappearing symptom there was no need of medicines. But without completing standard length of therapy it is high risk to resistance especially in case of antibiotics. Sometimes medicines will not further work.

All of the respondents told that their child did not suffer from any side effects after using the medicines. It can be possible that they were not noticed. As maximum parents taken paracetamol for their children in this case side effect could not be observed. Only cancer patients had side effects after taking the medicines.

84.69% respondents did not know about the antibiotic resistance is promoted by using antibiotics they are not needed. They actually did not know about the antibiotic properly. Antibiotic resistance can have harmful effects they did not have any idea about that. If antibiotics are not needed but they use in treatment then resistance can occur and they will not work further for specific disease where his antibiotic is needed.

## Discussion and Conclusion

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Antibiotic resistance is also promoted by not completing the full course of antibiotics. Majority of the respondents (87.87%) also did not know about that. If course of antibiotics will not complete then resistance will occurs as the physiology of the body can not complete the full cycle of recover.

Antibiotic resistance is promoted by self medication of antibiotics. Antibiotics have a length of duration of treatment and all antibiotics are not working for same treatment. Before treatment it is necessary to learn about the antibiotic which is given by the doctors. As maximum respondents (96.42%) did not know about the antibiotic resistance is promoted by self medication of antibiotics. So in this case in our country it is very risk to self medicate antibiotics. Children are mostly affected by inappropriate prescribing of antibiotics.

Most of the respondents (98.41%) did not know that antibiotic resistance is promoted by using antibiotics with other drugs. They actually did not know about the antibiotics. But there is no statement about this. Antibiotic can be treated with other drugs. For this there will be no risk of resistance. Only 1.39% of them know about the antibiotics.

Viral infection with fever should not be treated with antibiotics as antibiotics only effective against the bacteria. Virus will not be killed by antibiotic. But most surprise thing is that some of doctors of our country prescribed the antibiotic in virus infection. 97.80% respondent did not know about that. 0.60% respondents agreed as they treated their child with antibiotics in viral infection. Only 1.39% respondents disagree as they knew that viral infection should not be treated by antibiotics. The main indication for self-medication with antibiotics was respiratory problems such as common cold and sore throat. Such indication are usually of viral origin and efforts must be enhanced to increase the awareness of not only health professional but also the public to rational drug use and consequences of antibiotic misuse.

As resistance occurs by misuse of antibiotics so resistance antibiotic will not always be effective in the treatment of same infection in future. Though most of the parents (98.01%) did not know about that. 1.40% respondents disagree that antibiotic will always be effective in same infection because they know about the antibiotic resistance. 0.40% agreed that antibiotics will be effective in the same infection. It was their thought as they used the same medicines for same treatment.

## Discussion and Conclusion

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Antibiotics are susceptible to the risk of misuse and yet they are often exposed to high rate of self-medication practices.

Several research papers show that self-medication is a global phenomenon. This study focused on the self-medication of the OTC drugs, their use, its safety and reason for using it by the parents of the children. It would be safe, if the people who are using it, have sufficient knowledge about its dose, time of intake, side effect on over dose, but due to lack of information it can cause serious effects like skin problem, hypersensitivity and allergy. The demand of self-medication also is increasing day by day.

The study concluded that the parents had great expectations for the antibiotics and many of them practices self medication for their children when these children developed ailments that may not be microbial in origin, and if microbial it may not be bacterial in nature. Also the study concluded that the local community pharmacists can play crucial roles in enhancing the proper practicing of self medication because they are reliable sources of information for many parents.

It is recommended to encourage the parents to have greater attendance to private clinics or to local primary health care centers before acquiring antibiotics or other drugs because many ailments do not require these drugs. Also doctors must continuously improve their clinical skills and knowledge to educate the general population in addition to other public educational material about the proper use of antibiotics and to reduce the consequences of the irrational use; in the long term, as health care improves, then it will be necessary to enforce high regulatory authorities and dispense antibiotics and other drugs only by official prescriptions.

# CHAPTER FIVE

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