A survey on Bangladeshi parents' practice, knowledge and attitudes of self-medication to their children

A Dissertation submitted to the Department of Pharmacy, East West University, Bangladesh, in partial fulfillment of the requirements for the Degree of Bachelor of Pharmacy

Submitted by

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Declaration by the Research Candidate

I, MD. Didarul Islam Angkon , ID: 2012-1-70-016, hereby declare that the dissertation entitled "A survey on Bangladeshi parents' practice, knowledge and attitudes of self-medication to their children" submitted by me to the Department of Pharmacy, East West University and in the partial fulfillment of the requirement for the award of the degree Bachelor of Pharmacy, under the supervision and guidance Ms. Farah Shahjin, Senior Lecturer, Department of Pharmacy, East West University, Dhaka.

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Certificate by the Supervisor

This is to certify that the thesis entitled " A survey on Bangladeshi parents' practice, knowledge and attitudes of self-medication to their children " submitted to the Department of Pharmacy, East West University for the partial fulfillment of the requirement for the award of the degree Bachelor of Pharmacy is a record of original and genuine research work carried out by MD. Didarul Islam Angkon , ID: 2012-1-70-016 during the period 2015 of his research in the Department of Pharmacy, East West University, under the supervision and guidance of me.

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Certificate by the Chairperson

This is to certify that the thesis entitled "A survey on Bangladeshi parents' practice, knowledge and attitudes of self-medication to their children" submitted to the Department of Pharmacy, East West University for the partial fulfillment of the requirement for the award of the degree Bachelor of Pharmacy is a record of original and genuine research work carried out by MD. Didarul Islam Angkon , ID: 2012-1-70-016 during the period 2015 of his research in the Department of Pharmacy, East West University.

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Acknowledgement

Dedication

This research work is dedicated to my beloved parents, honorable faculties and loving friends.

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List of Abbreviation

1. OTC--------------------------Over the counter

2. ADR--------------------------Adverse drug reaction

3. NSAIDs----------------------Non-steroidal anti-inflammatory drugs

4. MRSA------------------------Methicillin resistant *Staphylococcus aureus*

5. VRE---------------------------Vancomycin resistant enterococci

6. HA-MRSA--------------------Hospital acquired *Staphylococcus aureus*

7. CA-MRSA--------------------Community associated *Staphylococcus aureus*

8. NAFDAC---------------------National agency for food and drug agency & control

Abstract

A survey entitled "An Analysis on Bangladeshi Parents' practice, knowledge and attitudes of self-medication to their children" was conducted in Dhaka city. 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 parents' knowledge, attitude and practice of self-medication to their children. After this study it is seen that self-medication tendency of parents to their children varies on age, previous experience, sort of disease and monthly net house hold income. Most of the parent self-medicated (65%) their child when they suffered from any disease, disorder or injury. Significant number of parents (34%) consulted to physician. Majority of the respondents (74%) have educational qualification within or below class 12 equivalent. Most of the children (44%) were suffered from fever. Some of them were also attacked by common cold and respiratory disease like pneumonia, asthma (32.44%). Few are suffered from some gastrointestinal disease like dysentery, diarrhea, food-poisoning. Form this study it is seen that all the children suffered from various diseases during last 6 months but almost 94.2% parents thought their child's health status is good enough. Only 1.8% parents thought their child's health status is poor. From this study it is seen that paracetamol, metronidazole, desloratadine, fexofenadine are the most common self-medicated medicine. When the parents were asked about antibiotic resistance then most of the respondents said that they do not have any idea about antibiotic resistance. They even do not know whether antibiotics are effective or not in viral fever. But most shocking thing is that about 45% parents agreed with the statement of viral infection with fever should be treated with antibiotics. A certain percent parents (58.6%) even do not know whether antibiotics are effective or not in the treatment of same infection in future if the full courses of the therapy do not maintained properly. Parents have to be concerned about antibiotics; they should not self-medicated antibiotics to their children.

Keywords: *Self-medication, health status, diseases, antibiotics, antibiotic resistance, viral infection.*

Chapter 1

Introduction

1. Introduction

1.1 Self-medication: concept and facts

Self-medication is the selection and use of medicines by individuals to treat self-recognized illnesses or symptoms. For the purposes of this definition, medicines include herbal and traditional products. Self-medication is one element of self-care. (Alternatives in Treatment, 2015)

Several benefits have been linked to appropriate self-medication, among them: increased access to medication and relief for the patient, the active role of the patient in his or her own health care, better use of physicians and pharmacists skills and reduced (or at least optimized) burden of governments due to health expenditure linked to the treatment of minor health conditions However, self-medication is far from being a completely safe practice, in particular in the case of non-responsible self-medication. Potential risks of self-medication practices include: incorrect self-diagnosis, delays in seeking medical advice when needed, infrequent but severe adverse reactions, dangerous drug interactions, incorrect manner of administration, incorrect dosage, incorrect choice of therapy, masking of a severe disease and risk of dependence and abuse. (Ruiz, 2010)

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. 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 programs. However, self-medication is associated with risks such as misdiagnosis, use of excessive drug dosage, prolonged duration of use, drug interactions and polypharmacy. The latter may be particularly problematic in the elderly. Monitoring systems, a partnership between patients, physicians and pharmacists and the provision of education and information to all concerned on safe self-medication, are proposed strategies for maximizing benefit and minimizing risk.(Hughes, McElnay and Fleming, 2001)

1.2 Historical perspective

Man has used drugs for various purposes from the dawn of history. Herbal and other plant derived remedies have been estimated by the World Health Organization (WHO) to be the most frequently used therapies worldwide. Plant-derived remedies can contain chemicals with potent pharmacological and toxicological properties. From the ancient civilization of South America came cocaine obtained from the leaves of Erythroxylon coca which was chewed for pleasure and reduction of fatigue. Extracts of cacti and mushroom species, used for religious purposes among Central and North American Indians can be used as a hallucinogenic agent. In Africa, eserine, a component of mitotic eye drops develops from calabar beans used in fetish practices. Bronchiodilatory effects of ephedra develops from ephedra plants species in ancients China while digitalis, a potent heart stimulant was developed from purple foxglove, an ingredient of herbal folk medicine in England. 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 *et. al.*, 2008)

1.3 Scope and distribution

The concept of self-medication, encouraging an individual to look after minor ailments with simple but effective remedies, has been adopted the world over. People hold the view that medicines should be used in the event of any sickness or discomfort. In the United Kingdom, the government encourages self-reliance while agencies like WHO promote individual family and community participation in primary health care. Poor diagnostic ability compounded by a limited knowledge of appropriate management results in the increase of self-medication and low rate of health care utilization. People are more likely to seek care from Physicians for symptoms that are

serious since it was perceived that Doctors do not have time for trivial complaints. Hence, whenever they perceive a symptom as minor, self-medication was usually used for treating themselves. A survey conducted in Poland revealed that self-medication, while widespread, does not imply a negative attitude towards health professionals or the existing system of medical care. On the contrary, people began to sense the positive benefits of self-care among which are its apparent contribution toward improvement of the efficiency of the overall health care system of them. (Afolabi *et. al*., 2008)

1.4 Self-medication – socio-demographic and medical factors

Despite a growing research interest in self-medication, little information has been available about its major determinants. Individual self-care in illness is shaped in the social environment a major determinant of the type and amount of health care services used88.The socio-demographic determinants are age, gender, occupation, education, marital status, religion, race, income and culture. The socio-medical factors may be related to the female reproductive role (pregnancy, breast feeding, and menstruation), psychiatric disturbance, medical states like asthma, migraine and so on.

The younger age group engaged in self-medication than the older ones. However, some studies revealed no association between age and self-medication. Women have above average knowledge about drugs and risks of self-medication compared to men. They also had a much higher probability of using supplements, OTC tranquilizers and analgesics for self-medication than men who on the other hand commonly use more stimulants. Self-medication with drugs to relieve depressive symptoms was far more likely in men than women. Factors related to general health status and women's reproductive role influences gender differences in self-medication. During breastfeeding, self-medication was dictated by the mother and her infant's disorder. In addition, women with pre-menstrual symptoms use caffeine as a form of self-medication to relieve the symptoms. However, some studies revealed no association between gender and self-medication. Various studies consistently showed that self-medication was associated with educational level. For instance, there is a positive correlation between level of education and self-medication.

The trend of consulting patent medicine dealers for prescription decreases with acquisition of more formal education. While studies showed no correlation between self-medication and occupational status, others revealed some association. For instance, employment status affected the pattern of OTC and prescription drugs. Specialist in anesthesiology, emergency medicine, general and family practice self-medication than other medical specialist probably due to habitual overwork and unrestricted access to drugs. The relationship between race and self-medication had been documented from various studies. Nonwhites had a higher probability of using tranquilizers than whites and whites likely than blacks to consume supplements. Among the elderly, fewer blacks reported the use of OTC medications than non-blacks. While some studies found little or no association between self-medication and social status, others reported that among school aged subjects, social classes of parents has a direct relationship with drug consumption among their children. The influence of culture is common in health related states and was related to female reproductive roles like childbirth, and in the treatment of morbidity and mortality in children. Athletes consume sex hormones to alter their menstrual cycle so as not to disturb the training schedule and competitive program while some use anabolic steroids to enhance their performance. (Afolabi *et. al.*, 2008)

1.5 Self-medication: Commonest complaint responsible

Usually, self-medication is indicated for trivial symptoms perceived by the patient. It was favored for skin condition, general health care, aches and pain, problems of the eye, mouth, gastrointestinal and respiratory tract. Among adult patients with acute pathology, the most common complaints were pain and increase body temperature. In a recent rural population study in Nigeria, it was in the order: malaria, gastrointestinal problems and urinary tract infections. Among rural Japanese housewives it was headache, tiredness and gastrointestinal problems while in American and British housewives, it was emotional or psychological complaints. Among children, respiratory symptoms especially for common cold with or without fever were the commonest complaints. With the use of antibiotics, the indication varies with different studies. The commonest complaints were for soft tissue, sexually transmitted diseases, upper respiratory and gastrointestinal tract infection; upper respiratory tract infection; respiratory infection; throat, dental and urogenital infection; respiratory tract infection and acute diarrhea and diarrhea,

abdominal pain, fever and rashes. For analgesics, the commonest complaints associated with its use are limb and back pain; self-perceived pain and poor health; and body pain, headache, body weakness and fever. Supplements are consumed for enhancement of diet, energy, immune system and for cancer prevention. (Afolabi *et. al*., 2008)

1.6 Guidance to physicians and their patients regarding responsible self-medication

The World Medical Association has developed a statement to provide guidance to physicians and their patients regarding responsible self-medication.

1. Distinction between Self-Medication and Prescription Medicine

   ✓ Medicinal products can generally be divided into two separate categories: prescription and non-prescription medicines. This classification may differ from country to country. The national authorities must assure that medicines, categorized as non-prescription medicines, are sufficiently safe not to be harmful to health.

   ✓ Prescription medicines are those which are only available to individuals on prescription from a physician following a consultation. Prescription medicines are not safe for use except under the supervision of a physician because of toxicity, other potential or harmful effects (e.g. addictiveness), the method of use, or the collateral measures necessary for use.

   ✓ Responsible self-medication, as used in this document, is the use of a registered or monographed medicine legally available without a physician's prescription, either on an individual's own initiative or following advice of a healthcare professional. The use of prescription medicines without a prior medical prescription is not part of responsible self-medication.

   ✓ The safety, efficacy and quality of non-prescription medicines must be proved according to the same principles as prescription medicines.

2. Use of Self-Medication in conjunction with Prescription Medication A course of treatment may combine self-medication and prescription medication, either concurrently or sequentially. The patient must be informed about possible interactions between prescription medicines and non-prescription medicines. For this reason the patient should be encouraged to inform the physician about his / her self-medication.

3. Roles & Responsibilities in Self-Medication

   ✓ In self-medication the individual bears primary responsibility for the use of self-medication products. Special caution must be exercised when vulnerable groups such as children, elderly people or pregnant women use self-medication.

   ✓ If individuals choose to use self-medication, they should be able:

      • to recognize the symptoms they are treating;

      • to determine that their condition is suitable for self-medication;

      • to choose an appropriate self-medication product;

      • to follow the directions for use of the product as provided in the product labeling.

   ✓ In order to limit the potential risks involved in self-medication it is important that all health professionals who look after patients should provide:

      • Education regarding the non-prescription medicine and its appropriate use, and instructions to seek further advice from a physician if they are unsure. This is particularly important where self-medication is inappropriate for certain conditions the patient may suffer from;

      • Encouragement to read carefully a product's label and leaflet (if provided), to seek further advice if necessary, and to recognize circumstances in which self-medication is not, or is no longer, appropriate.

✓ All parties involved in self-medication should be aware of the benefits and risks of any self-medication product. The benefit-risk balance should be communicated in a fair, rational manner without overemphasizing either the risks or the benefits.

✓ Manufacturers in particular are obliged to follow the various codes or regulations already in place to ensure that information provided to consumers is appropriate in style and content. This refers in particular to the labeling, advertising and all notices concerning non-prescription medicines.

✓ The pharmacist has a professional responsibility to recommend, in appropriate circumstances, that medical advice be sought.

4. Role of Governments in Self-Medication Governments should recognize and enforce the distinction between prescription and non-prescription medicines, and ensure that the users of self-medication are well informed and protected from possible harm or negative long-term effects.

5. The Promotion and Marketing of Self-Medication Products

✓ Advertising and marketing of non-prescription medicines should be responsible, provide clear and accurate information and exhibit a fair balance between benefit and risk information. Promotion and marketing should not encourage irresponsible self-medication, purchase of medicines that are inappropriate, or purchases of larger quantities of medicines than are necessary.

✓ People must be encouraged to treat medicines (prescription and non-prescription) as special products and that standard precautions should be followed in terms of safe storage and usage, in accordance with professional advice. (Guidelines for the regulatory assessment of medicinal products for use in self-medication, 2015)

1.7 Reasons for self-medication

Self-medication has been an issue quite common in our society today whereby everyone is their own doctors. We have come to the point whereby either due to economic, and both internal and external factors we go to the pharmacy shops and buy drugs that we think will help us get better quickly and avoid going to the hospital and meeting the doctor. Well it could be the right thing to do at some point, but it all depends on the condition that one if feeling because it could range from a minor headache to a serious emergency situation. So in short, it is very prudent for one to get a prescription from a health professional before going to buy any drug over the counter. 10

The common reasons could be to cure an ailment, suppress its cause indefinitely to give the body time to completely overcome it or for prevention, prophylaxis, palliation, convenience, postponing a natural event, out of habit or for special purposes. In some cases, the main reasons could be triviality of the symptoms, to save money and time, lack of gravity to go and see a physician because they can take care of themselves or previous medical prescription for related symptoms. In specific diseases like acute nonspecific diarrhea, people self-medicated because the ailments were of short duration, can be treated symptomatically with non-prescription medications and adequate hydration and do not require a visit to the physician office. In the case of chronic illnesses, it could be the cost of medication, patient's psychological status, perceptions of the seriousness of their illness and vulnerability to complications. For antimalarial, self-medication with orthodox medication was greater than traditional remedies because of their efficiency, popularity, cheapness and availability, distance and cost of seeking care from the formal health service and cultural beliefs. Among market women, reasons given for self-medication were in the order: for minor ailments, cheapness and because they know what to do. Among dental patients, since the commonest complaint was pain, the main reason for self-medication was to serve as a means of avoiding the need for dental attendance altogether. Acute headache sufferers may treat themselves with OTC if they perceive it to be more adequate than prescribed drugs. Reasons for using psychoactive drugs among the young people range from insomnia, worry or depression to intoxication while smokers may self-treat negative effects like major depression with nicotine. (Afolabi *et. al*., 2008)

1.8 Sources of information for self-medication

The common places for drug supply were in the order: pharmacies, general medicine dealers, hospital/clinics, traditional sources, private practitioners and other sources like household medicine cabinet containing previous medical prescriptions which may not have been prescribed for the same condition. Recent studies agreed that the pharmacy, roadside/patent medicine stores were the commonest places where drugs were obtained for self-medication purposes. Other studies also agree that family medicine cabinet were sources of self-medication. However, the common sources of household stock are chemist, pharmacy, supermarket, hospital/clinics,

friends and relatives. In developing countries common sources of anti-malarial used for self-treatment were street and village shops and this could account for up to half of antimalarial drug distribution. Recent studies in Nigeria and Cameroun agrees with the above showing that the hospital/pharmacy, patent /road side medicine dealers, and local hawkers/mobile drug vendors and native healers were the commonest sources. In choosing the most appropriate medicine to buy from the chemist shop, people relied on the advice of the sales clerk in the chemist shop, print media, family and friend, pharmacist, general medicine dealers, general and private medical practitioners. Among the young ones, sources of drugs knowledge include family members especially the mother (for therapeutic purposes), peer groups and illegal market (for intoxication purposes). Among secondary school pupils in a Hong Kong study, the sources were in the following order: family members, previous illness experience, pharmacy shops, doctors or nurses, television or radio, newspaper or magazines, friends and teachers. For painful condition, people self-select drugs for self-medication while small percentages were advised by the pharmacist or non-health professionals. Since individuals suffering from sexually transmitted diseases often treat themselves with antibiotics, the common sources of drug supply were the medicine cabinet at home and the sources of drug knowledge were family members and friends. For dietary supplements, the principal source of drug information was the mass media. (Afolabi et.al., 2008)

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%) followedbyconvenience(25.0%). (Keshar, Kesarwan and Mishra, 2014)

1.9 Risk and Benefits of self-medication

Unjustified and inappropriate self-medication results in wastage of healthcare resources and increases resistance of pathogens, drug-drug interactions, and adverse drug reactions leading to hospital admissions Sociocultural and socioeconomic characteristics, the previous experience with a symptom or disease, the attitude toward a disease, the way in which healthcare is funded or reimbursed, the increased potential to manage illnesses through self-care, and the availability of medicinal products have been quoted as explanatory factors of the self-medication. (Hughes, Mcelnay, and Fleming, 2001)

Risks associated with self-medication include lack of clinical evaluation of the condition by a health care provider which could result in misdiagnosis and incorrect choice of drugs, delays in seeking appropriate treatments, use of excessive drugs or lower dosage and prolonged duration of use. Other potential risks include the development of adverse drug reactions, dangerous drug interactions and masking of a severe disease. (Hughes, McElnay, and Fleming, 2001)

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. (MedicineNet, 2016)

Self-medication products are those not requiring a medical prescription and which are produced, distributed and sold to consumers for use on their own initiative. Responsible self-medication can be used to prevent and treat symptoms and ailments that do not need medical consultation or oversight. This reduces pressure on medical services, especially when these are limited. For those populations living in rural or remote areas where access to medical services may be difficult, patients are able to control their own conditions to a greater extent. Only if the condition fails to respond, persists, or becomes more severe will the patient need to seek professional medical care. (Afolabi *et. al*., 2008)

Self-medication can facilitate access to medicines and reduce health care costs. But more specific studies are needed to evaluate the impact and role of self-medication in the diversity of settings of different health care sectors. The combined efforts of industry and regulators must meet the expectations of consumers by providing products which are safe, effective, good value for money, and accompanied by complete and relevant information. High ethical standards should be applied to the provision of information, promotional practices and advertising. The content and quality of such information and its mode of communication remains a key element in educating consumers in responsible self-medication. (WHO, 2015)

In the case of non-prescription medicinal products, all of the information required to permit safe and effective use must come from the labeling material, patient information texts, the individual's previous personal experience and various sources of information in the media, advertising, and advice given by health care professionals.

The rapid development of new technology, and especially the Internet and related communication systems, has opened up new possibilities for searching for information. This may eventually offer important new channels for the dissemination of knowledge on medicinal products, their characteristics and proper use in self-medication, although the quality of information may vary. It should be emphasized, however, that there are marked differences in opportunities to obtain access to this information between people with different socioeconomic

and educational backgrounds and in different countries. Well-tested labeling designed for a particular cultural milieu can help to reduce these differences. However, it should not be used in a way that would limit the availability of the OTC product. (Guidelines for the regulatory assessment of medicinal products for use in self-medication, 2015)

1.9.1 Potential benefits of self-medication

The social and economic benefits of self-medication reflect the fact that it is voluntarily chosen by consumers for conditions where it seems preferable to them. It will usually be selected for use in symptoms and conditions which the user regards as sufficiently troublesome to need medicinal treatment but not to justify consulting a physician. Only if the condition fails to respond, persists or becomes more severe will professional medical help be sought. Accordingly, good self-medication should offer the individual consumer:

1. Efficacy: i.e. the product does what it is claimed to do;
2. Reliability and safety: the individual will often choose a product which experience has shown to be suitable. The scope and duration of self-medication can be kept within safe limits by appropriate selection of approved indications, labeling texts, dosage strengths and forms, and package sizes;
3. Product safety when used as recommended in the instructions;
4. Acceptable risk, even when used for a longer duration, at a higher dose, or somewhat differently than recommended in the instructions;
5. Wider availability of medicines;
6. Greater choice of treatment;
7. Direct, rapid access to treatment;
8. An active role in his or her own health care;
9. Self-reliance in preventing or relieving minor symptoms or conditions;
10. Educational opportunities on specific health issues (i.e. stop-smoking aids and products to treat heartburn);
11. Convenience;

12. Economy, particularly since medical consultations will be reduced or avoided;

At the community level, good self-medication can also provide benefits such as saving scarce medical resources from being wasted on minor conditions, lowering the costs of community-funded health care programs (including prescription reimbursement systems), and reducing absenteeism from work due to minor symptoms. (WMA statement on self-medication, 2010)

1.9.2 Potential risks of self-medication

Depending on the situation, the risks associated with a medication can vary; however, there are some risks that are common to many individuals.

Self-medication has a number of potential risks. In particular, the ordinary user will usually have no specialized knowledge of the principles of pharmacology or therapy, or of the specific characteristics of the medicinal product used. This results in certain potential risks for the individual consumer:

1. Incorrect self-diagnosis;
2. Failure to seek appropriate medical advice promptly;
3. Incorrect choice of therapy;
4. Failure to recognize special pharmacological risks;
5. Rare but severe adverse effects;
6. Failure to recognize or self-diagnose contraindications, interactions, warnings and precautions;
7. Failure to recognize that the same active substance is already being taken under a different name (products with different trademarks may have the same active ingredient);
8. Failure to report current self-medication to the prescribing physician (risk of double medication or harmful interaction);
9. Failure to recognize or report adverse drug reactions;
10. Incorrect route or manner of administration;
11. Inadequate or excessive dosage;

12. Excessively prolonged use;

13. Risk of dependence and abuse;

14. Risks at work or in sport;

15. Food and drug interactions;

16. Storage in incorrect conditions or beyond the recommended shelf-life;

17. At the community level, improper self-medication could result in an increase in drug-induced disease and in wasteful public expenditure;

18. It is important to realize that many of these risks are not unique to self-medication: they can also occur in the prescription situation, particularly, if the patient consults several physicians for the illness or lacks counseling during therapy;

In selecting the types of medicinal products that can be used for self-medication, the aim should be to exploit the benefits listed above and to minimize the risks. (WMA statement on self-medication, 2010)

The risks that are associated with self-medication include:

- Inaccurate diagnosis
- Using inappropriate medications that cause side effects
- Masking the symptoms of a serious condition
- Delaying medical advice
- Inaccurate dosage that leads to accidental overdose
- Mixing medications that are not safe to mix, which may result in legal costs or health concerns
- Risk of abuse
- Risk of developing an addiction or several addictions

In the worst-case scenario, self-medicating can lead to severe health conditions or even death. (Master, 2015)

Although the frequency of self-medication among Mexican migrants has been well-documented in the public health literature, the multiple reasons for this practice are poorly understood. Most studies point to migrants' cultural preferences for Mexican medications, their prior experiences in

countries where antibiotics are loosely regulated, and their lack of access to health care as the primary factors behind their self-medication. Based on participant observation we argue that occupational vulnerability is an equally important factor that encourages self-medication. (Horton and Stewart, 2011)

1.10 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 sufferers. 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 persist. It therefore produces pleasurable sensation of "reward" and physical dependency. 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. (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 fetus. The beverage, alcohol (ethanol) was so commonly consumed that it is seldom 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)

1.11 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 Bucaretchi, 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 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. (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)

1.12 Common disease in children in where self-medicated has been done

1.12.1 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)

1.12.1.1 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)

1.12.2 Common cold

The common cold, also known as rhino pharyngitis, 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)

1.12.2.1 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 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)

1.12.3 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.

1.12.3.1 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 respiratorytract.(Smith,2009)

1.13 Antibiotics and antibiotic resistance

Antibiotics and similar drugs, together called antimicrobial agents, have been used for the last 70 years to treat patients who have infectious diseases. Since the 1940s, these drugs have greatly reduced illness and death from infectious diseases. However, these drugs have been used so widely and for so long that the infectious organisms the antibiotics are designed to kill have adapted to them, making the drugs less effective.

Each year in the United States, at least 2 million people become infected with bacteria that are resistant to antibiotics and at least 23,000 people die each year as a direct result of these infections. (Antibiotic resistance (drug resistance, Antimicrobial resistance) symptoms, causes, treatment - diagnosis of antimicrobial drug resistance, 2016)

Drug resistance means any drug classified as an antimicrobial that has been compromised or has reduced or no activity when used to treat certain microbes (viruses, bacteria, fungi and

parasites).Antibiotics are medicines designed to kill or stop or slow growth of bacteria (and some fungi) while an antibacterial substance is designed to kill or slow bacterial growth.

MRSA and VRE are terms that describe specific types of antibacterial resistance; MRSA describes Methicillin-Resistant *Staphylococcusaureus* bacteria while VRE describes Vancomycin-Resistant *Enterococi.* Drug resistance occurs when microbes survive and grow in the presence of a drug that normally kills or inhibits the microbe's growth. The history of drug resistance began with the development of antimicrobial drugs, and the subsequent ability of microbes to adapt and develop ways to survive in the presence of antimicrobials. There are many causes of antimicrobial drug resistance including selective pressure, mutation, gene transfer, societal pressures, inappropriate drug use, inadequate diagnostics, hospital use and agricultural use of drugs. Diagnosis of antimicrobial drug resistance is performed by lab tests that challenge the isolated microbes to grow and survive in the presence of the drug. (Antibiotic resistance symptoms,causes,treatment-diagnosisofantimicrobialdrugresistance,2016)

1.13.1 Antimicrobial

An antibiotic is a medicine designed to kill or slow the growth of bacteria and some fungi. Antibiotics are commonly used to fight bacterial infections, but cannot fight against infections caused by viruses.

Microbe is a collective name given to bacteria (e.g., *Staphylococcus aureus*, which causes some staph infections), viruses (e.g., influenza, which causes the flu), fungi (e.g., Candida albicans, which causes some yeast infections), and parasites (e.g., *Plasmodium falciparum*, which causes malaria)

Antibacterial is the term given to substances that kill or slow the growth of bacteria when treating human and environmental surfaces. These include substances that aid in proper hygiene.

Examples of antibacterial-containing commercial products are:

- Hand soaps, gels, foams

- Dishwashing detergents and mattresses

Examples of antimicrobial agents:

- Tetracycline (one antibiotic used to treat urinary tract infections)

- Oseltamivir or Tamiflu (antiviral that treats the flu)

- Terbinafine or Lamisil (antifungal that treats athlete's foot)

1.13.2 What is antimicrobial resistance

Antimicrobial resistance is the ability of microbes, such as bacteria, viruses, parasites, or fungi, to grow in the presence of a chemical (drug) that would normally kill it or limit its growth.

The following diagram showing the differences between non resistant bacteria and drug resistant bacteria. Non-resistant bacteria multiply, and upon drug treatment, the bacteria die. Drug resistant bacteria multiply as well, but upon drug treatment, the bacteria continue to spread.
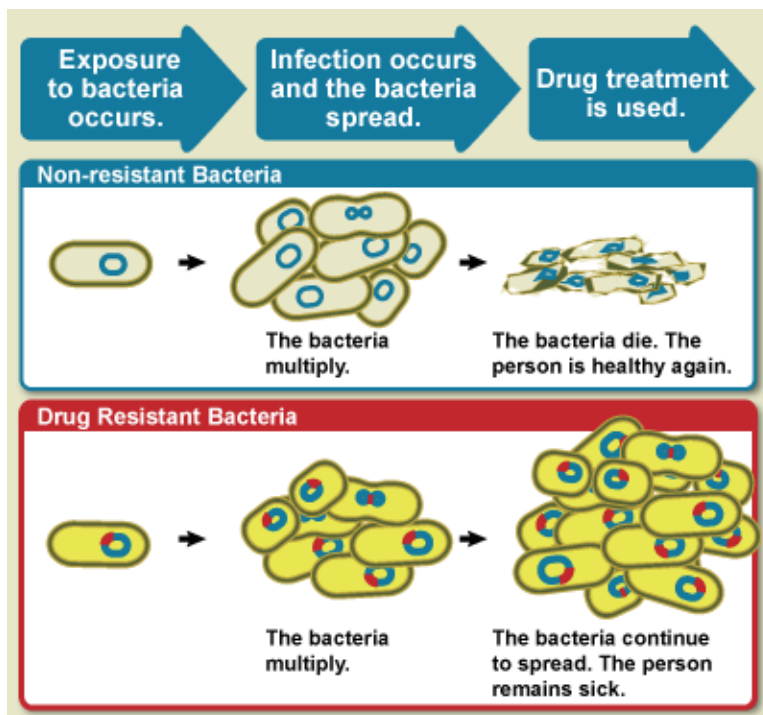
Figure 1.13.1: Differences between non resistant bacteria and drug resistant bacteria. (Hughes, McElnay, and Fleming, 2001)

1.13.3 The history of antimicrobial (Drug) resistance

Microbes are living organisms that reproduce, thrive, and spread quickly and efficiently. Microbes include bacteria (e.g., *Staphylococcus aureus*, which causes some staph infections), viruses (e.g., influenza, which causes the flu), fungi (e.g., *Candida albicans*, which causes some yeast infections), and parasites (e.g., *Plasmodium falciparum*, which causes malaria).

In 1928 while working with *Staphylococcus* bacteria, Scottish scientist Alexander Fleming noticed that a type of mold growing by accident on a laboratory plate was protected from, and even repelled, the bacteria. The active substance, which Fleming called penicillin, was literally an antibiotic-it killed living organisms.

Thus began the age of using natural and, later, synthetic drugs to treat people with bacterial infections. Though not widely popular until the 1940s, antibiotics and other antimicrobials have saved countless lives and blunted serious complications of many feared diseases and infections. The success of antimicrobials against disease-causing microbes is among modern medicine's great achievements. (Antibiotic resistance (drug resistance, Antimicrobial resistance) symptoms, causes, treatment - diagnosis of antimicrobial drug resistance, 2016)

1.13.4 Causes of antimicrobial drug resistance

Microbes, such as bacteria, viruses, fungi, and parasites, are living organisms that evolve over time. Their primary function is to reproduce, thrive, and spread quickly and efficiently. Therefore, microbes adapt to their environments and change in ways that ensure their survival. If something stops their ability to grow, such as an antimicrobial, genetic changes can occur that enable the microbe to survive. There are several ways this happens. Such as

A. A growing health issue

The emergence of drug-resistant microbes is not new or unexpected. Both natural causes and societal pressures drive bacteria, viruses, parasites, and other microbes to continually change in an effort to evade the drugs developed to kill them.

B .Natural causes

Like all organisms, microbes undergo random genetic mutations, and these changes can enhance drug resistance. Resistance to a drug arising by chance in just a few organisms can quickly spread through rapid reproduction to entire populations of a microbe.

C. Natural (Biological) Causes

1. Selective Pressure

In the presence of an antimicrobial, microbes are either killed or, if they carry resistance genes, survive. These survivors will replicate, and their progeny will quickly become the dominant type throughout the microbial population.

2. Mutation

Most microbes reproduce by dividing every few hours, allowing them to evolve rapidly and adapt quickly to new environmental conditions. During replication, mutations arise and some of these mutations may help an individual microbe survive exposure to an antimicrobial.
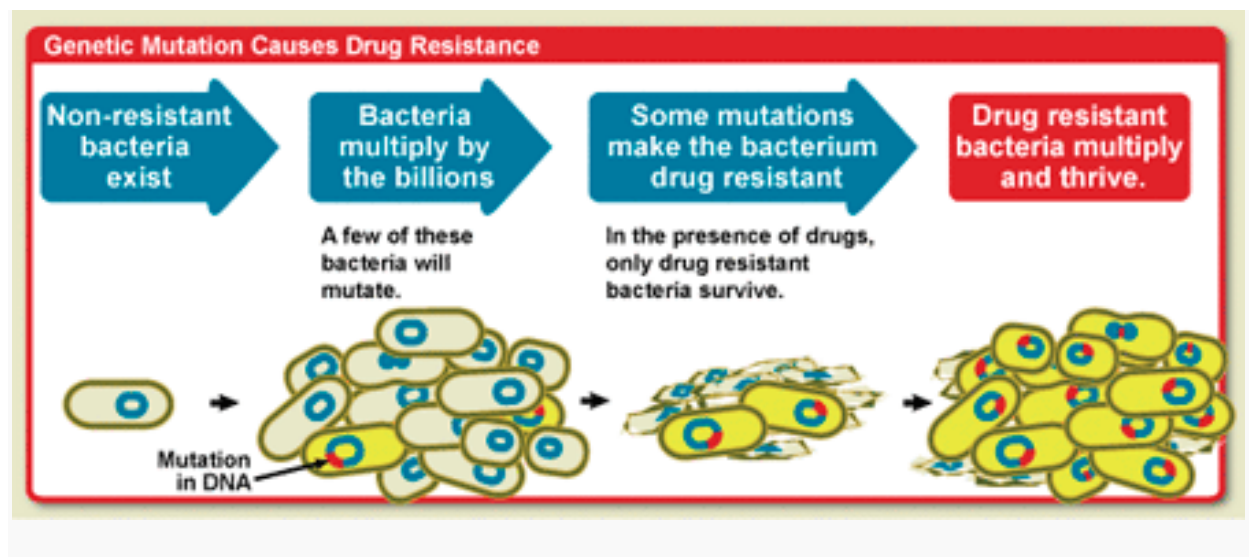
Figure 1.13.2: Mutation causes of drug resistance (Hughes, McElnay, and Fleming, 2001)

3. **Societal Pressures**

The use of antimicrobials, even when used appropriately, creates a selective pressure for resistant organisms. However, there are additional societal pressures that act to accelerate the increase of antimicrobial resistance

4. Gene Transfer

Microbes also may get genes from each other, including genes that make the microbe drug resistant.
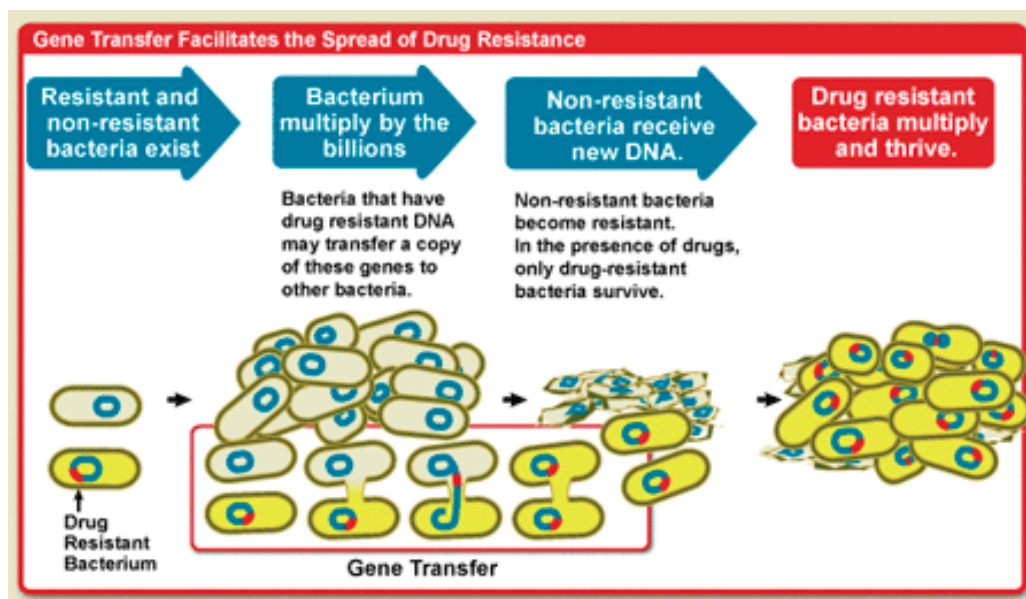
Figure 1.13.3: Gene transfer facilitates drug resistance (Hughes, McElnay, and Fleming, 2001)

5. Inappropriate Use

Selection of resistant microorganisms is exacerbated by inappropriate use of antimicrobials. Sometimes healthcare providers will prescribe antimicrobials inappropriately, wishing to placate an insistent patient who has a viral infection or an as-yet undiagnosed condition.

6. Inadequate Diagnostics

More often, healthcare providers must use incomplete or imperfect information to diagnose an infection and thus prescribe an antimicrobial just-in-case or prescribe a broad-spectrum antimicrobial when a specific antibiotic might be better. These situations contribute to selective pressure and accelerate antimicrobial resistance.

7. Hospital Use

Critically ill patients are more susceptible to infections and, thus, often require the aid of antimicrobials. However, the heavier use of antimicrobials in these patients can worsen the problem by selecting for antimicrobial-resistant microorganisms. The extensive use of antimicrobials and close contact among sick patients creates a fertile environment for the spread of antimicrobial-resistant germs.

8. Agricultural Use

Scientists also believe that the practice of adding antibiotics to agricultural feed promotes drug resistance. More than half of the antibiotics produced in the United States are used for agricultural purposes. However, there is still much debate about whether drug-resistant microbes in animals pose a significant public health burden.

9. Diagnosis of antimicrobial drug resistance

Diagnostic tests are designed to determine which microbe is causing infection and to which antimicrobials the microbe might be resistant. This information would be used by a healthcare provider to choose an appropriate antimicrobial treatment. However, current diagnostic tests often take a few days or weeks to give results. This is because many of today's tests require the microbe to grow over a period of time before it can be identified.

Oftentimes, healthcare providers need to make treatment decisions before the results are known. While waiting for test results, healthcare providers may prescribe a broad-spectrum antimicrobial when a more specific treatment might be better. The common practice of treating unknown infections with broad-spectrum antimicrobials can accelerate the emergence of antimicrobial resistance. (Ruiz, 2010)

1.13.5 Treatment of antimicrobial drug resistance

If you think you have an infection of any type-bacterial, viral, or fungal-talk with your healthcare provider. Some infections will go away without medical intervention. Others will not and can become extremely serious. Ear infections are a good example: Some middle ear infections are caused by a virus and will get better without treatment. However, other middle ear infections caused by bacteria can cause perforated eardrums, or worse, if left untreated.

The decision to use antimicrobials should be left to your healthcare provider. In some cases, antimicrobials will not shorten the course of the disease, but they might reduce your chance of transmitting it to others, as is the case with pertussis (whooping cough).

Antibiotics are designed to kill or slow the growth of bacteria and some fungi. Antibiotics are commonly used to fight bacterial infections, but cannot fight against infections caused by viruses.

Antibiotics are appropriate to use when

1. There is a known bacterial infection

2. The cause of the infection is unknown and bacteria are suspected. In that case, the consequences of not treating a condition could be devastating (e.g., in early meningitis).

Of note, the color of your sputum (saliva) does not indicate whether you need antibiotics. For example, most cases of bronchitis are caused by viruses. Therefore, a change in sputum color does not indicate a bacterial infection.

1.13.6 Prevention of antimicrobial drug resistance

To prevent antimicrobial resistance, you and your healthcare provider should discuss the appropriate medicine for your illness. Strictly follow prescription medicine directions, and never share or take medicine that was prescribed for someone else. Talk with your healthcare provider so that he or she has a clear understanding of your symptoms and can decide whether an antimicrobial drug, such as an antibiotic, is appropriate.

Do not save your antibiotic for the next time you get sick. Take the medicine exactly as directed by your healthcare provider. If your healthcare provider has prescribed more than the required dose, appropriately discard leftover medicines once you have completed the prescribed course of treatment.

Healthy lifestyle habits, including proper diet, exercise, and sleeping patterns as well as good hygiene, such as frequent hand washing, can help prevent illness, therefore also preventing the overuse or misuse of medications.

1.13.7 Microbes increasingly resistant to drugs

a. Food-borne bacteria such as *E.coli*, *Salmonella*, and *Campylobacter* that can cause diarrhea and gastroenteritis

b. Sexually transmitted bacteria that cause gonorrhea

c. Penicillin-resistant *Streptococci* responsible for pneumonia.

d. Tuberculosis

e. Influenza

f. HIV

g. Malaria (Antibiotic resistance, 2016)

Literature Review:

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)

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)

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 pediatric hospital in Lagos, Nigeria. The major complaints mentioned by the caregivers included fever, cough, and diarrhea. 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 diarrhea was associated with antidiarrheal 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)

Prevalence of self-medication practices and its associated factors in Urban Pondicherry, 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 Pondicherry. 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 bizzare 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)

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 Like 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 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® (49.5%) and Gripe water® (43.0%) were the two frequently prescribed and self-medicated medicines for infants with colic. (Oshikoya, Senbanjo and Njokanma, 2009)

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

A community-based cross-sectional study 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 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)

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 parents' knowledge, attitude and practice of self-medication to their children.
- Determine the prevalence of self-medication in children with various diseases, by parents
- Correlate factors such as the educational status and income level of the parents, type and severity of child's disease with tendency to self-medicate their child.
- Find out parents' reasons and understanding of self-medicating their children
- Find out parents' perception of severity of their child's disease condition

Chapter 2

Methodology

2. Methodology

2.1 Study subjects

We carried out a systematic exploration of Bangladeshi parents' practice, knowledge and attitudes of self-medication to their children in Dhaka city. The age group of children was 0-12 years who are suffered from any diseases during last 6 months. 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 these 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 Place of the study

We collected data from various place in Dhaka city. Mirpur, Ajimpur, Uttora, Jatrabari, Rampura, Old Dhaka, Malibagh, Santinagar, Banasree, Gulshan, Banani, Dhanmondi maximum area were included in the survey place.

2.5 Study population

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

2.6 Sample size

There were 500 parents of children who participate in the survey. The question was filled up by father or mother of child.

2.7 Sampling technique

Samples were collected by non-probability convenient technique.

2.8 Data collection instrument

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

2.9 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 microsoft excel, software in a computer for analysis in the line of objectives .Then the data were presented in diagrams and tables.

2.10 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.

2.11 Sample questionnaire

Bangladeshi parents' practice, knowledge and attitudes of self-medication to their children
(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: ☐ 1st born ☐ 2nd born ☐ 3rd 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

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) ☐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

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 3
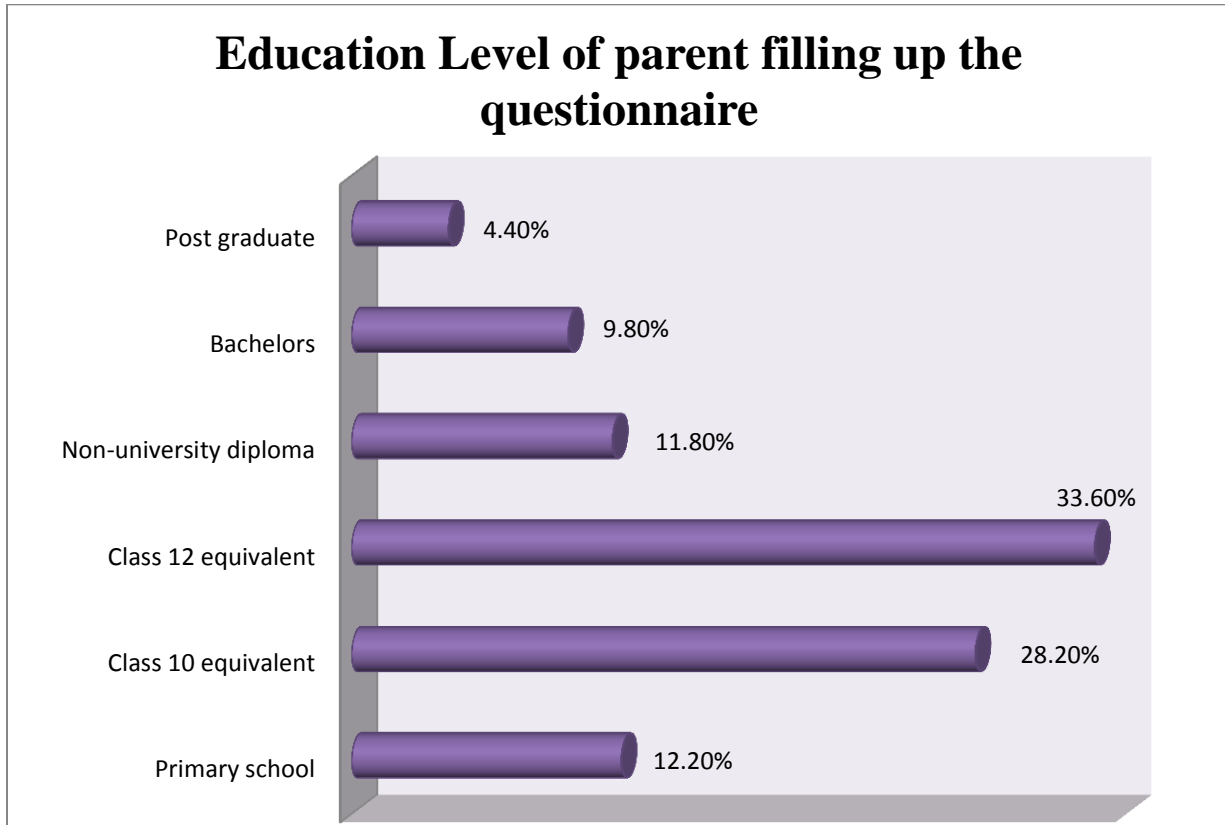# Result

3.1 Demographic Information

3.1.1 Parent filling up the questionnaire
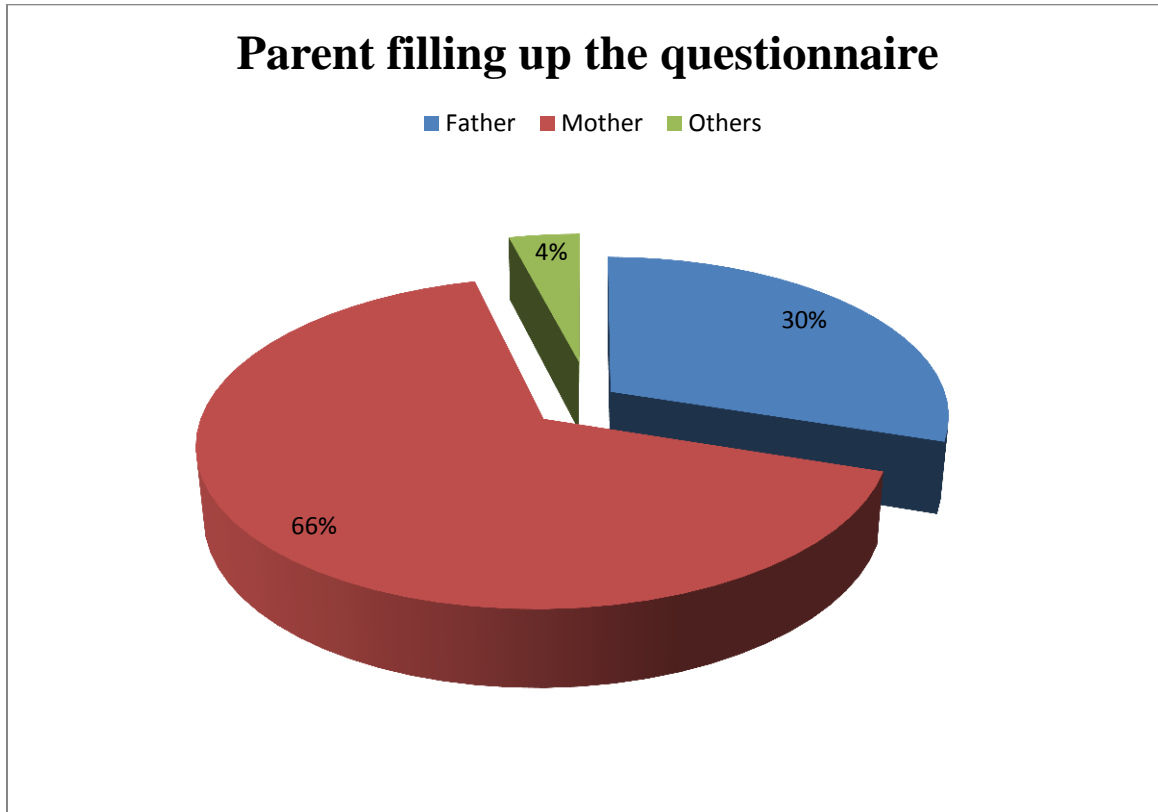
Figure 3.1.1: Parent filling up the questionnaire

From the above pie chart we can see that majority of the respondents are mother (66%), another 4% respondents are other family members like elder brother, sisters or other relatives. This pie chart has formed against the question on medication provider.

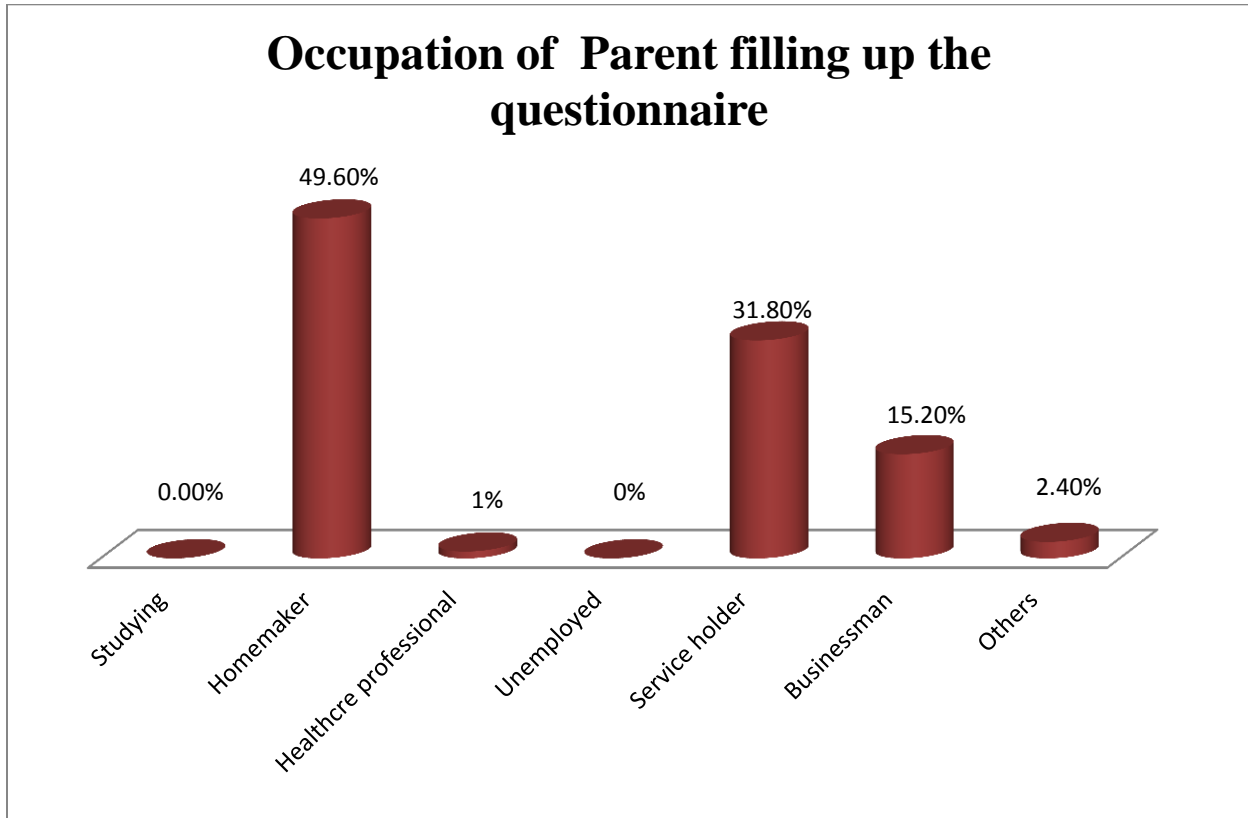**3.1.2 Education level of parent filling up the questionnaire**

Figure 3.1.2: Education Level of parent filling up the questionnaire

From the above figure we can see the education level of medication provider. We can see that almost 74% respondents education level are below or up to class 12 equivalent. Other 26% respondents have higher educational qualification.

3.1.3 Occupation of parent filling up the questionnaire

Occupation of Parent filling up the questionnaire

49.60%

31.80%

15.20%

0.00%   1%   0%   2.40%

Studying   Homemaker   Healthcre professional   Unemployed   Service holder   Businessman   Others

Figure 3.1.3: Occupation of Parent filling up the questionnaire

Majority of the respondents are homemaker (49.60%). 47% respondents are service holder and businessman. Only 1% respondents are healthcare professionals like doctors, nurse or pharmacist.

3.1.4 Net household income (in BDT) of Parent filling up the questionnaire

Net household income

■ Net household income

		56.00%		
	12.80%		15.80%	15.40%
0%				
<Tk 5000	Tk 5000-10,000	Tk 10,000-30,000	Tk 30,000 <	Do not want to discuss
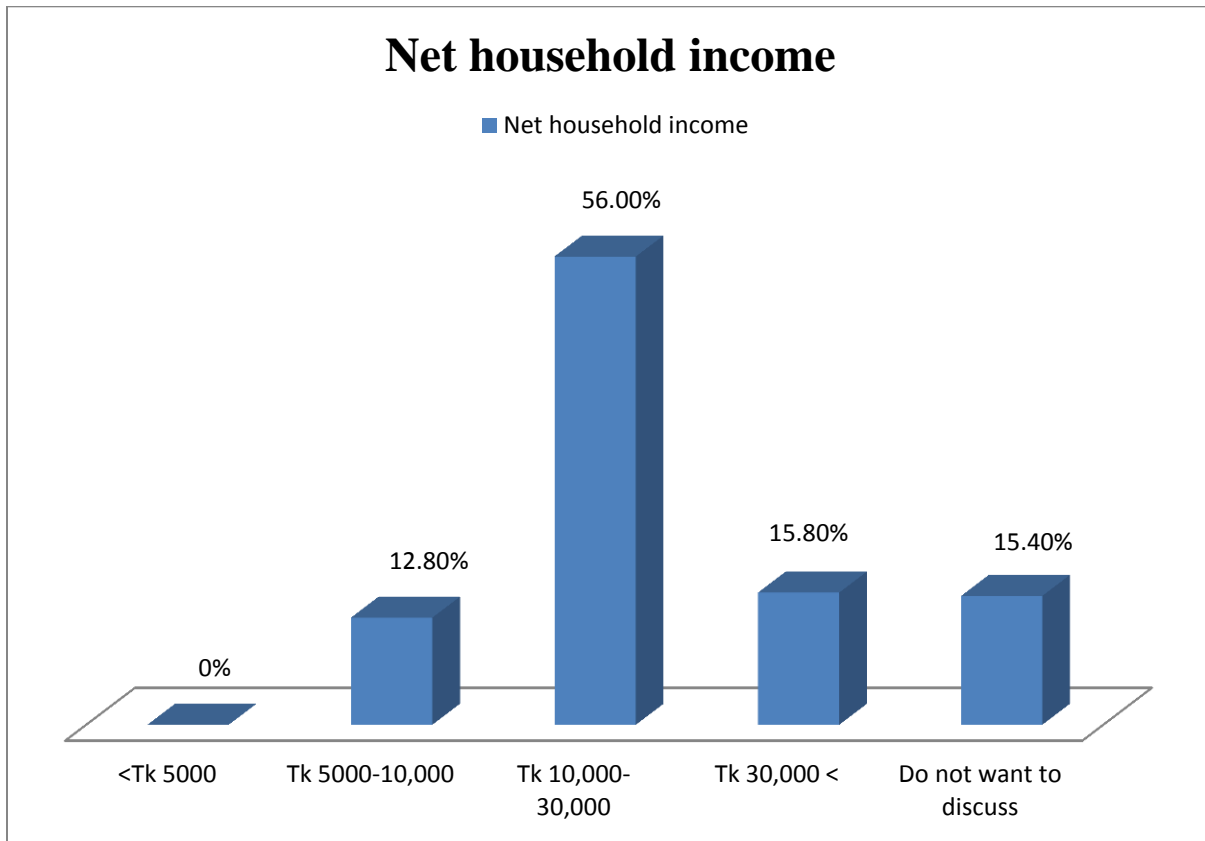
Figure 3.1.4: Net household income (in BDT) of Parent filling up the questionnaire

Among 500 respondents, majority respondents family have net household income is in the range of Tk 10,000-30,000. There are also few respondents whose net household income is below Tk 5000. There are many who did not want to reveal their income status.
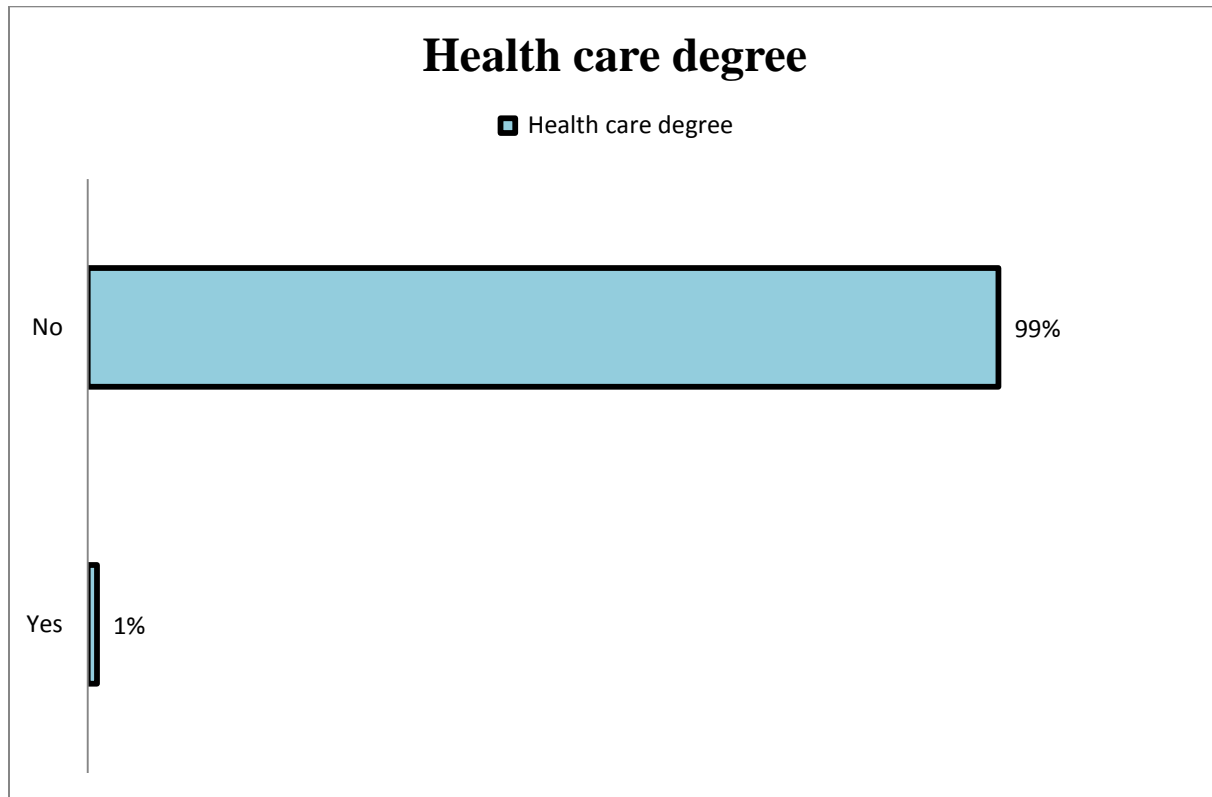
3.1.5 Number of child in the family
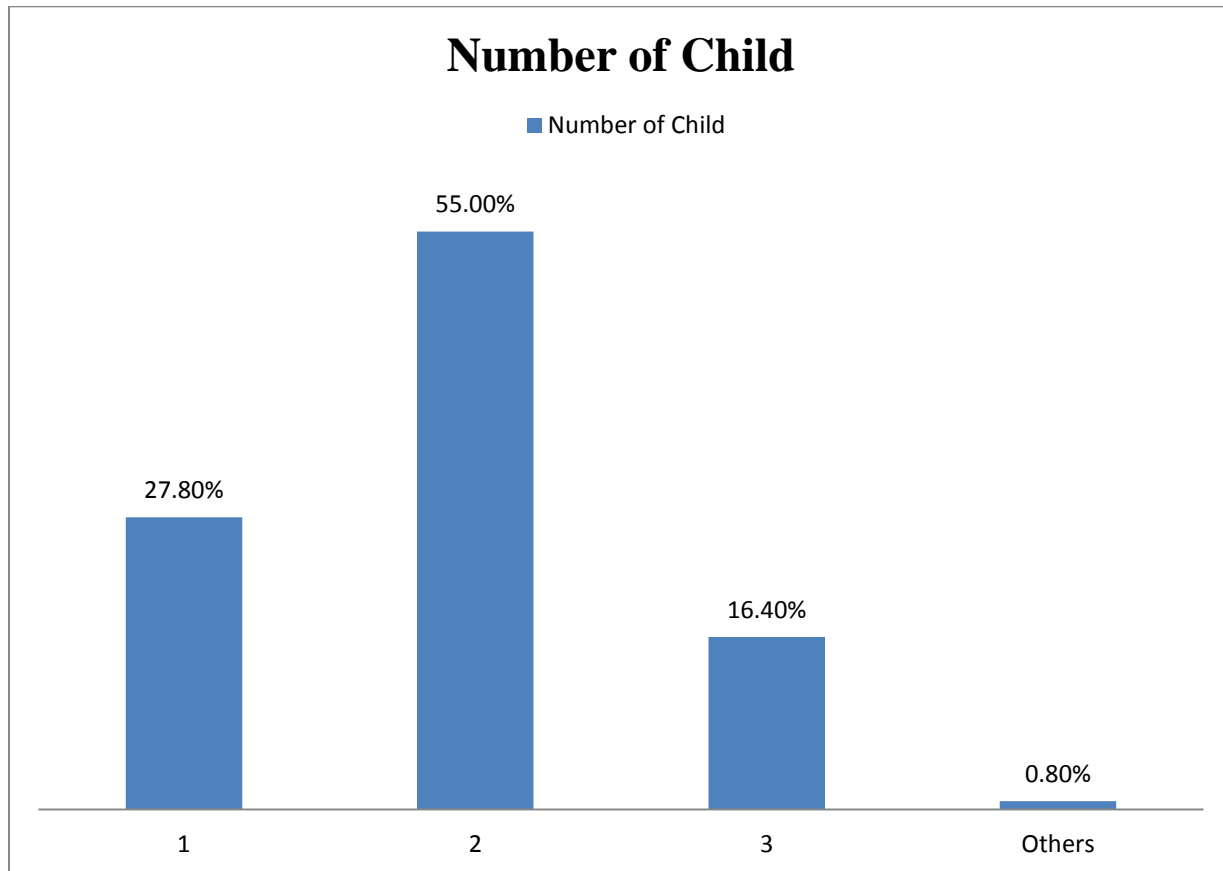
Figure 3.1.5: Number of child in the family of responders

Among 500 respondents, most of the family has two child (55%). 27.80% family has one child and 16.40% family has three child. 0.80% family has more than three child.

3.1.6 Health care degree of the Parent filling up the questionnaire

Figure 3.1.6: Health care degree

Among 500 respondents, majority of the respondents (99%) do not have any health care degree. Only 1 % respondents have health care degree.

3.1.7 Age of child (who is medicated)
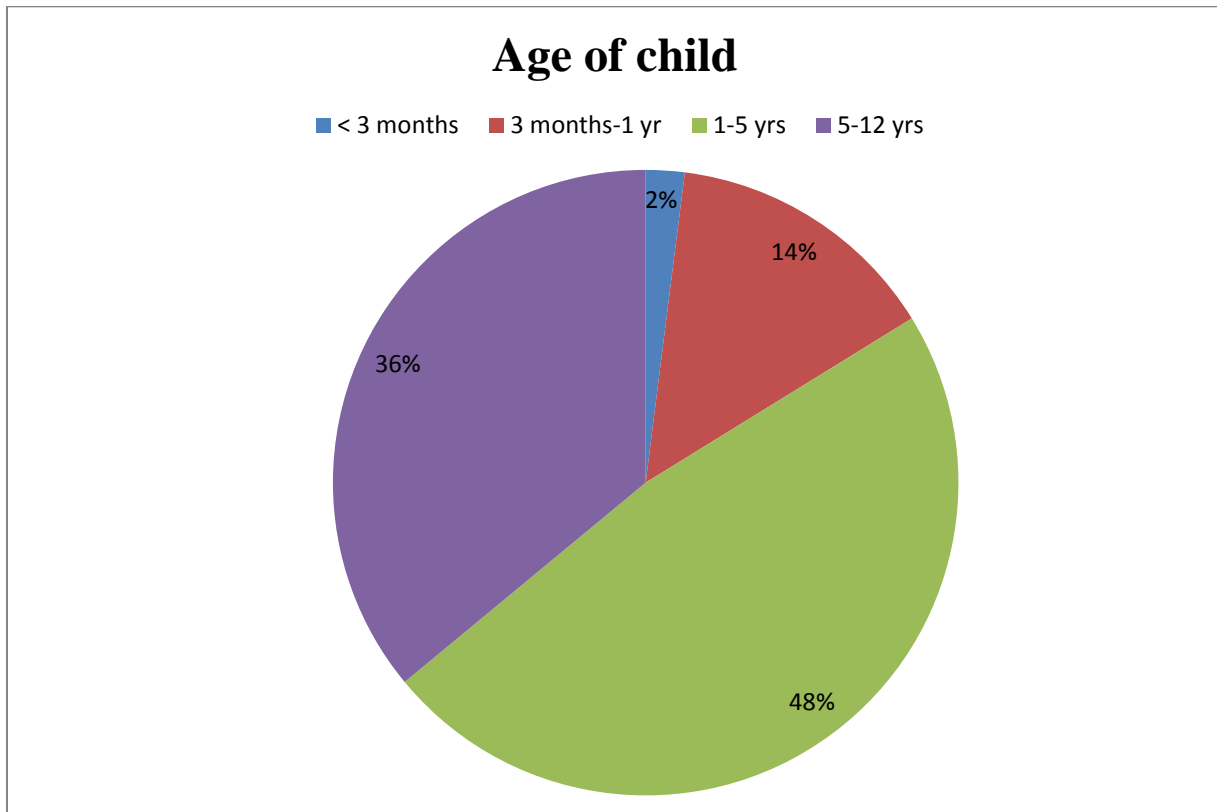
Figure 3.1.7: Age of child (who is medicated)

The above figure shows that 48% child's age is in 1-5 years. 36% child is in 5-12 years range and 14% child's age is in the 3 months-1 years range. Only 2 % child's age is in < 3 months.

3.1.8 Gender of child

Gender of child

■ Male   ■ Female

46%

54%
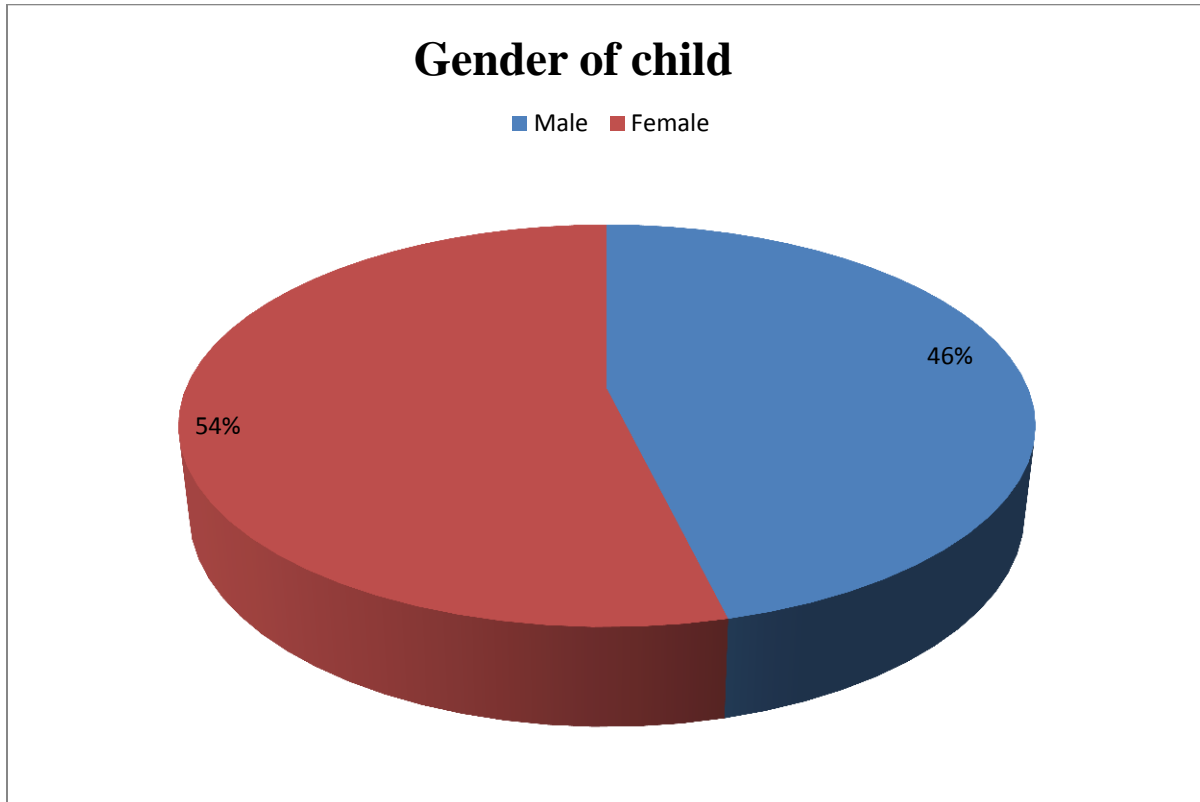
Figure 3.1.8: Gender of child

There are almost equal percentages of male and female child who is medicated by their parents.

3.1.9 Child who is medicated
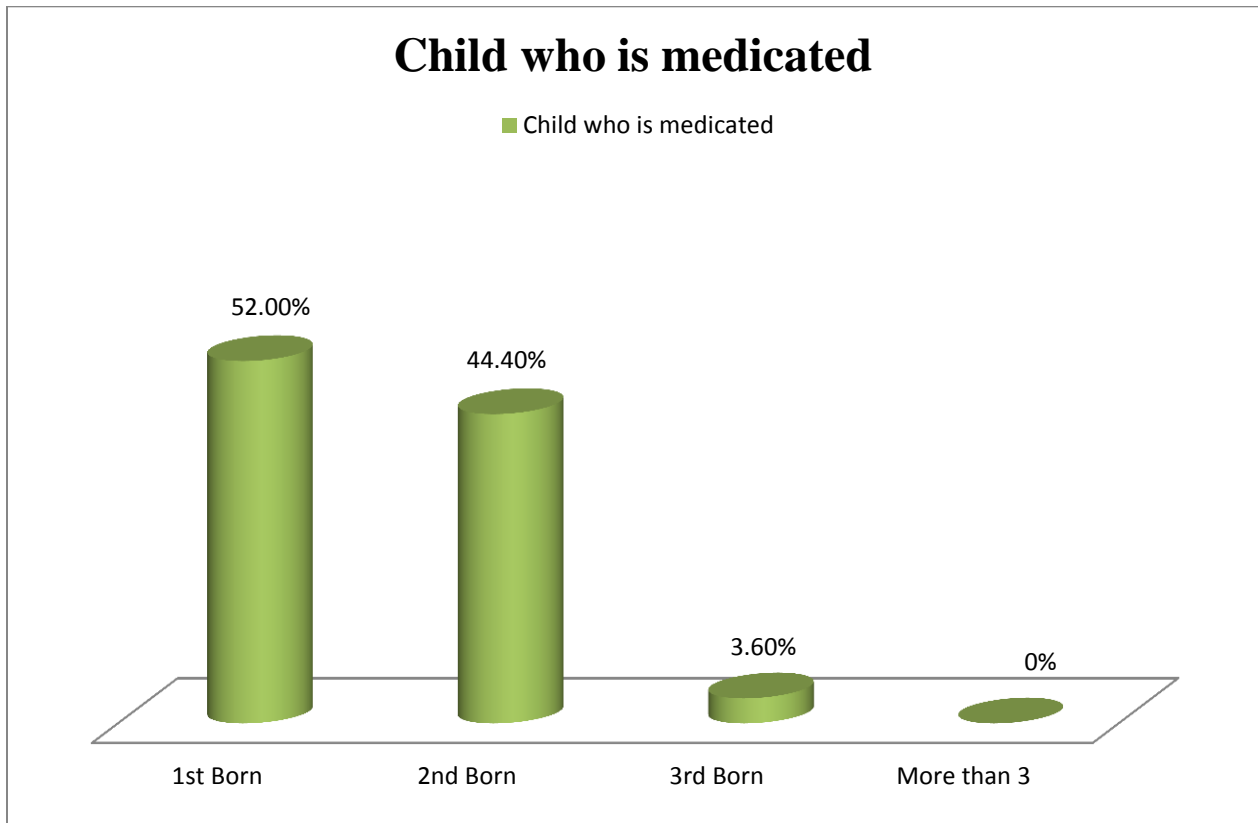
Figure 3.1.9: Child who is medicated

Among all respondents, most of the children were either 1st or 2nd born who is medicated.

3.2 Child's disease during and medication usage information

3.2.1Nature of diseases in child
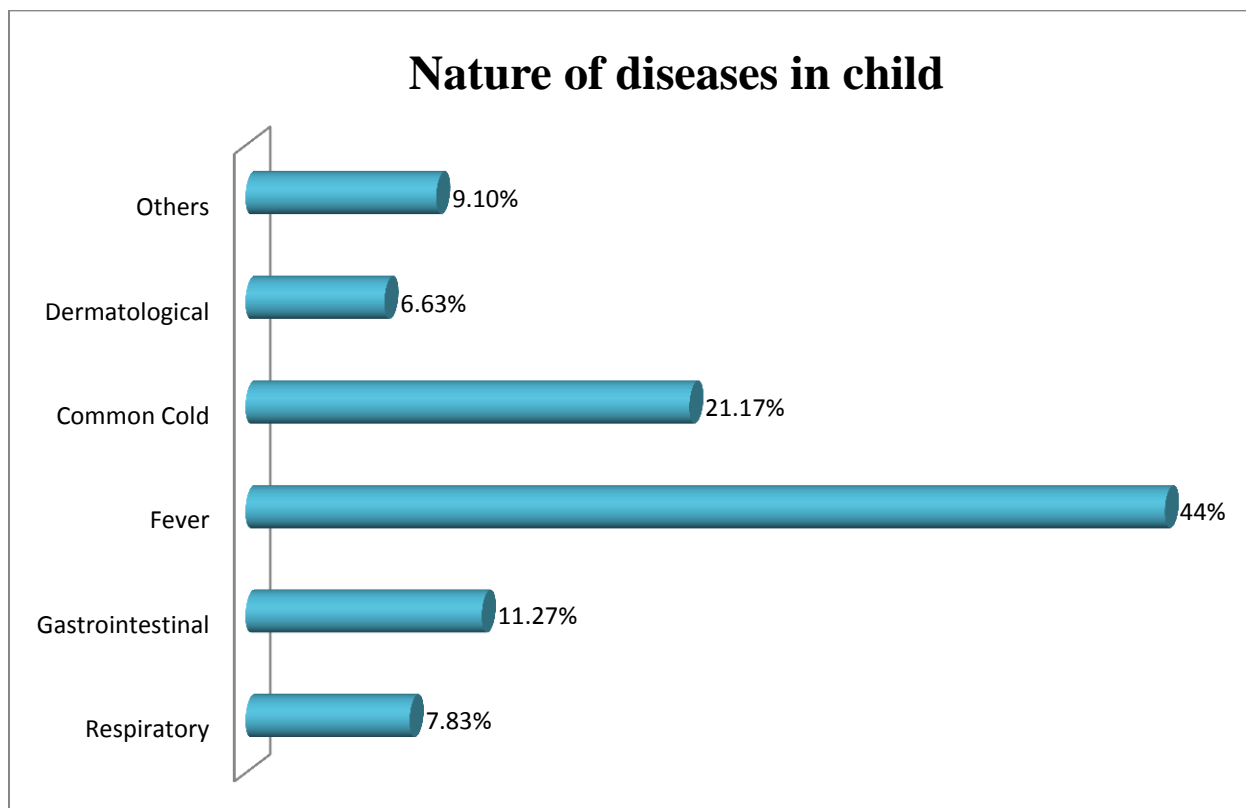
Figure 3.2.1: Sort of diseases

Form this survey it has seen that majority of the child (44%) has suffered from fever during last 6 months and 21.17% child suffered from common cold, 25.73% child suffered from different diseases like gastrointestinal disease, respiratory disease and dermatological disease.

3.2.2Perception of parents about health status of child

	Good	Fairly Good	Moderate	Fairly poor	Poor
■ Health status	4.00%	52.40%	41.80%	1.80%	0.00%
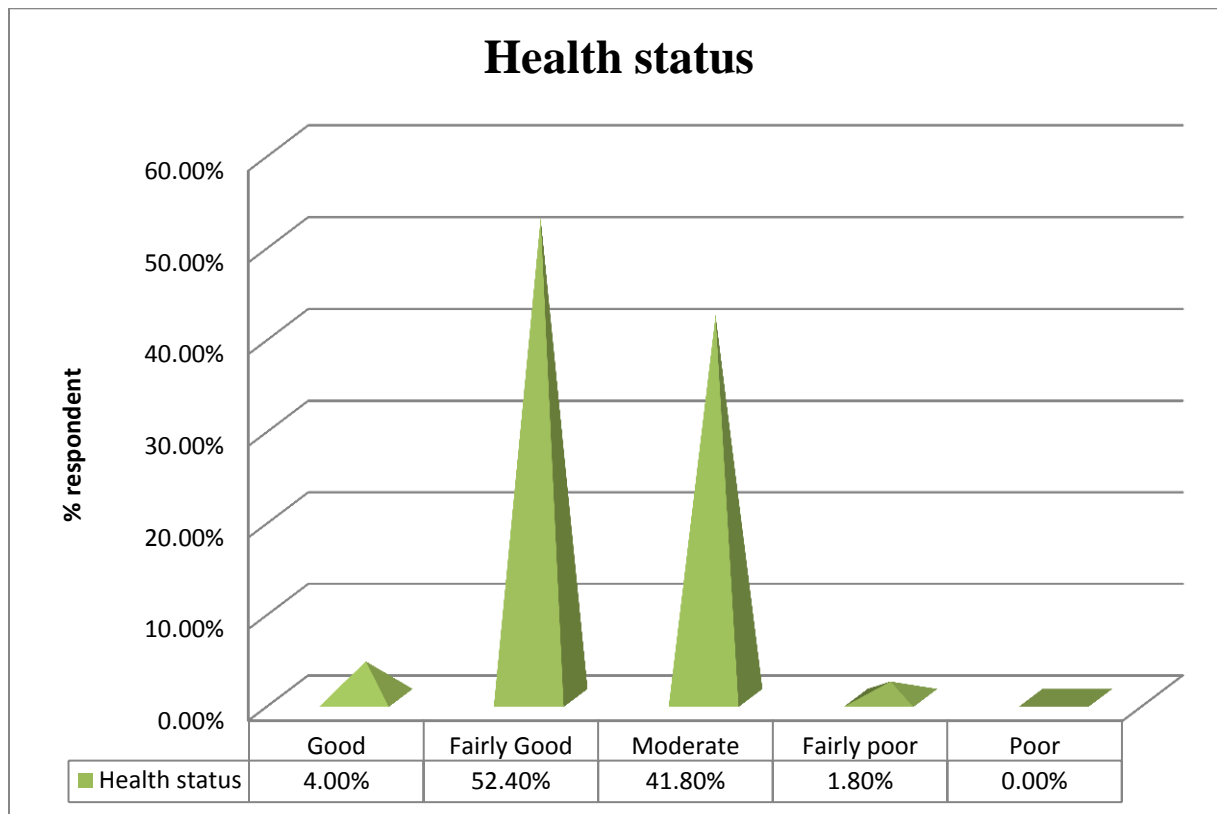
Figure 3.2.2: Perception of parents about health status of child

Form this study it is seen that all the children suffered from various diseases during last 6 months but almost 94.2% parents thought their child's health status is good enough. Only 1.8% parents thought their child's health status is poor.

3.3 Parental perception and understanding of drug use

3.3.1 Response of parents when child suffered from disease
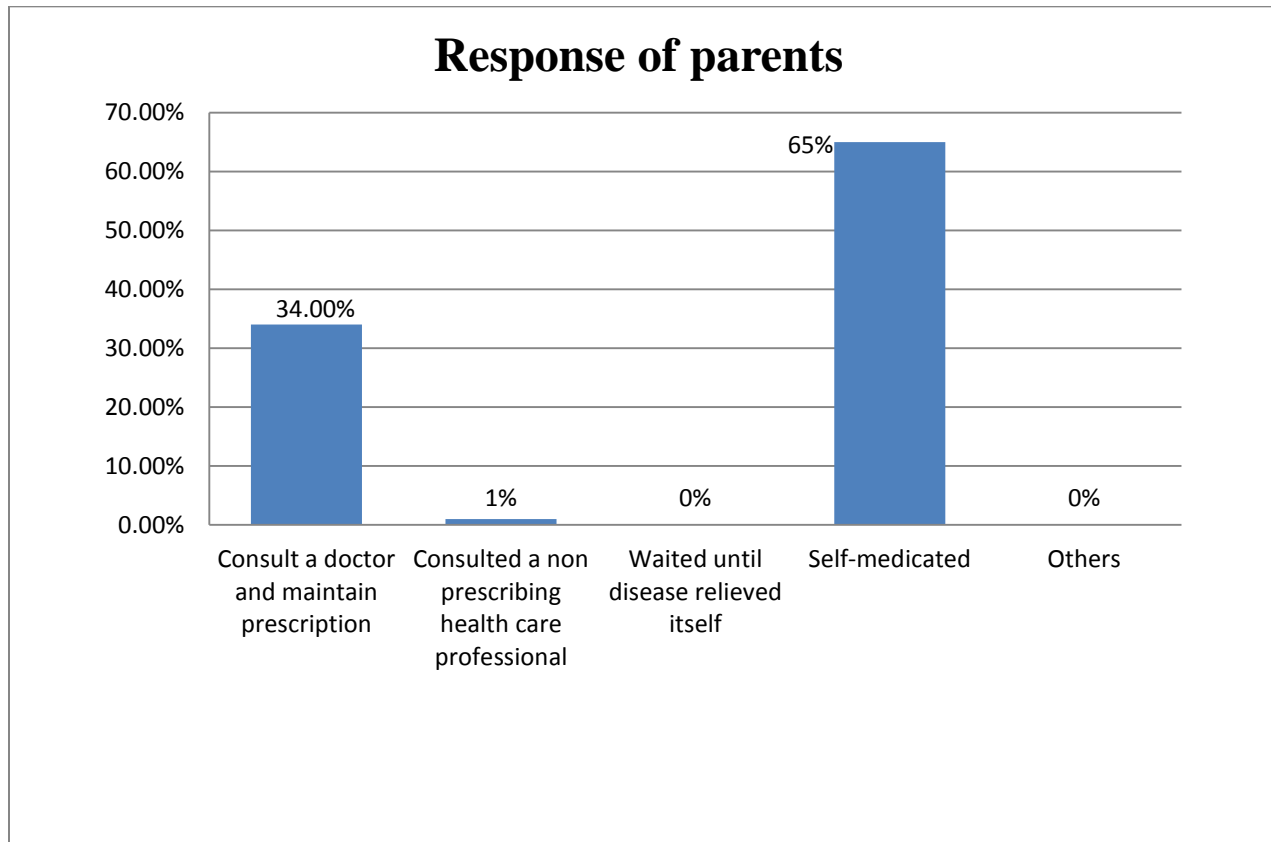
Figure 3.3.1: Response of parents when child suffered from disease

From this survey it is found that 65% respondents have self-medicated their child when their child suffered from disease, 34% have consulted a doctor and maintain prescription. Only 1 % respondent has consulted a non-prescribing health care professional like homeopathy doctors, compounders, diploma degree containing pharmacist, paramedics.

3.3.2 Knowledge about self-medication safety

Knowledge about self medication safety

Yes ▪ No ▪ vary disease to disease ▪ Do not know

2%   7%

21%

70%
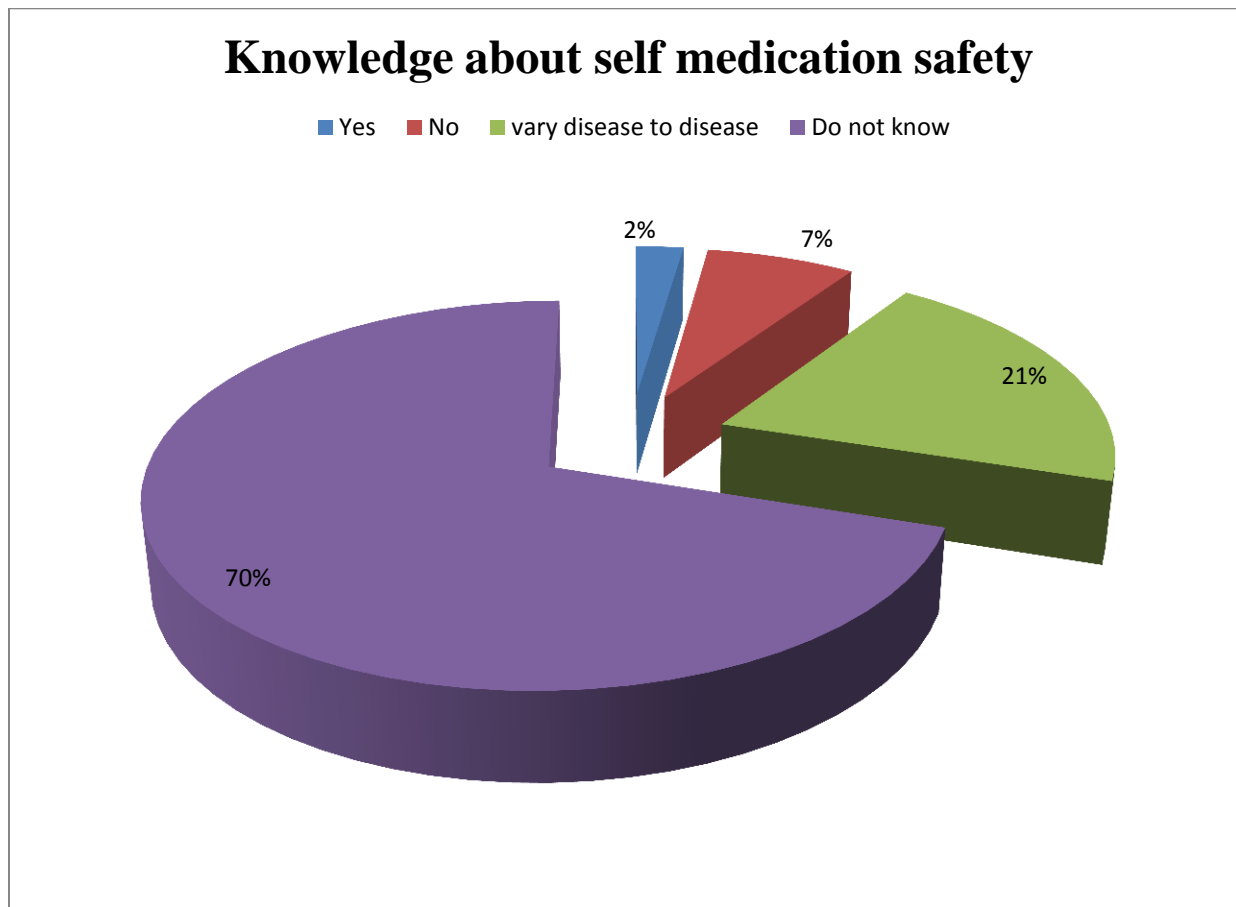
Figure 3.3.2: Knowledge about self-medication

Majority of the respondents (70%) have no knowledge about self-medication whether it is safe or not, 21% respondentsrevealed that depending on disease, they weigh the options for self-medicating or consulting a doctor. The thing is that 2% respondents think self-medication is safer than receiving medications upon consult a doctor.

3.3.3 Reasons behind self-medication

Reasons behind self medication

Category	Value
Lack of nearby health careprovider	0%
Taking child in inconvenient	0%
High cost of treatment	0%
Previous prescription as reference for same illness	42.16%
Shortage of drug supply in stores	0%
Asked doctor for a medication	0.00%
Long waiting time to avil doctor	3.38%
previous treatment by physician was unsuccessful	0%
Self decision by parents	0%
Considered ailment as minor	54.46%
Others	0%

Figure 3.3.3: Reasons behind self-medication

54.46% respondents considered ailment as minor, 42.16% respondents used the previous prescription as reference for same illness when they had asked the reasons behind self-medication. Only 3.38% respondents said that waiting time to avail doctor is lengthy.

3.3.4 Drugs which are self-medicated

Name of the drug

Drug	Percentage
Tetracycline	0%
Desloratadine/fexophenadine	26.74%
Metronidazole	0.27%
Oral Saline	9.47%
Homeopathy	0%
Amoxicillin/penicillin	0%
Sulbutamol	7.80%
Cefixime	1.11%
Paracetamol	53.50%
Others	1.11%
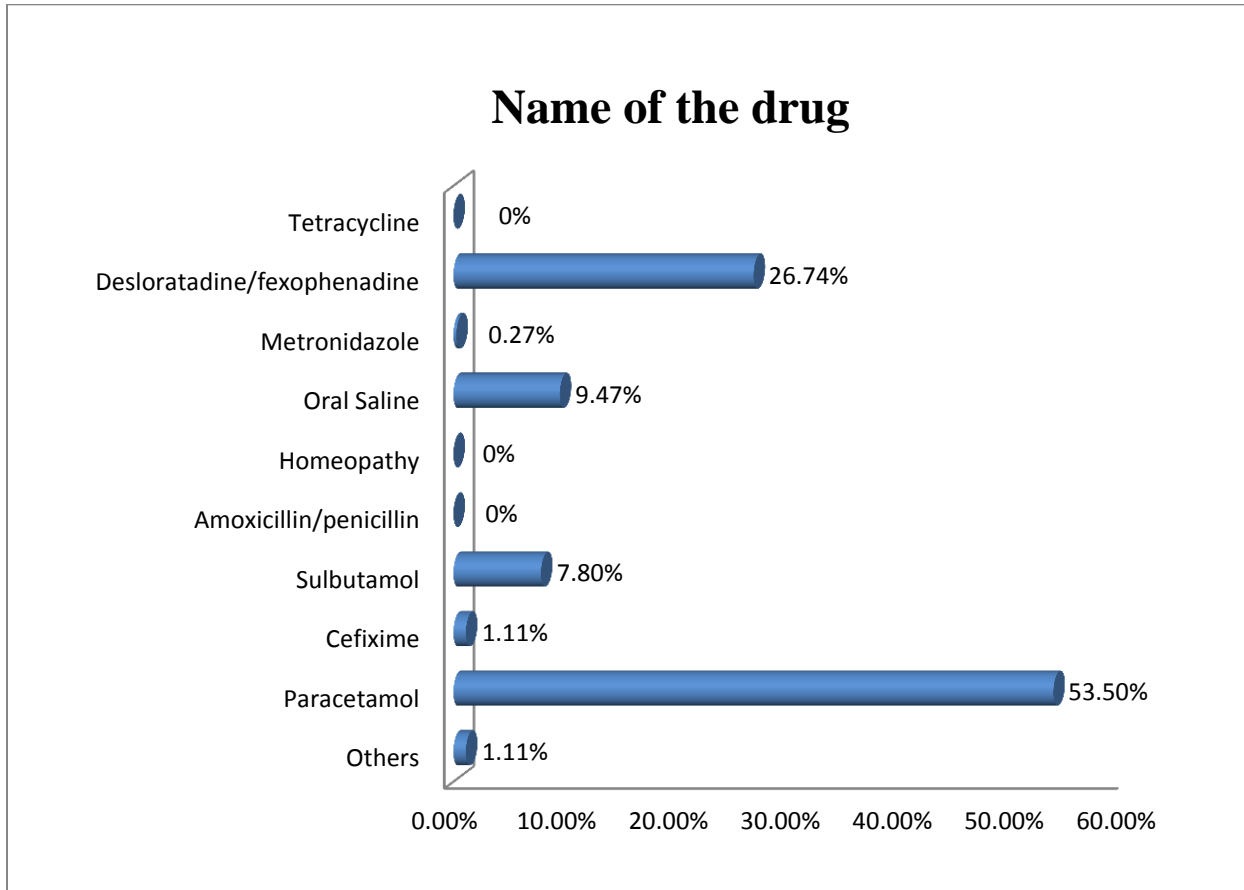
Figure 3.3.4: Medication history

Majority of the respondents (53.5%) self-medicated paracetamol. Then the second highest self-medicated drug is desloratadine and fexophenadine. The other self-medicated drugs are salbutamol (7.80%), oral saline (9.47%).

3.3.5 Conscious about side effect of the drug prior to administration in child

Conscious about side effect of the drug
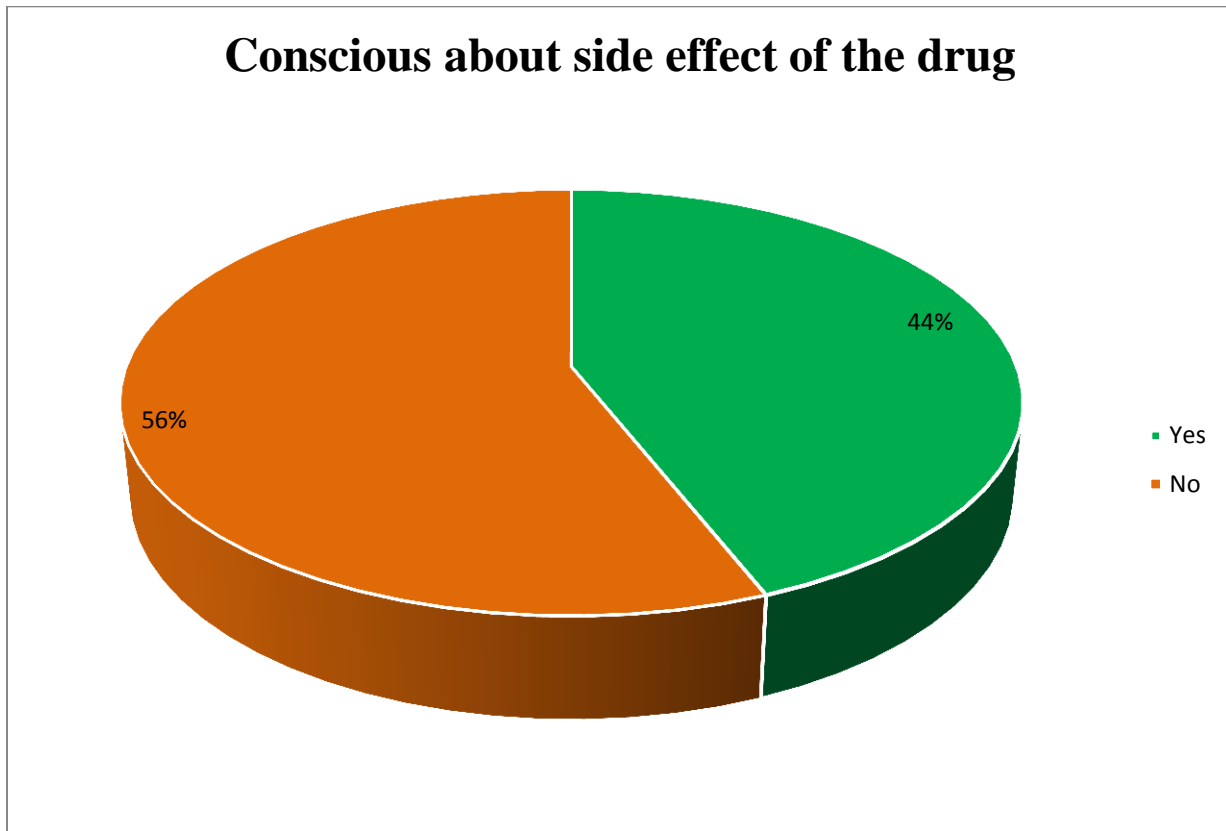
44%

56%

- Yes
- No

Figure 3.3.5: Conscious about side effect of the drug

Among all the respondents, 56% respondents are not conscious about the side effect of the drug and 44% respondents said that they are conscious about the side effect of the drug.

3.3.6 Knowledge about drug before administering that to child
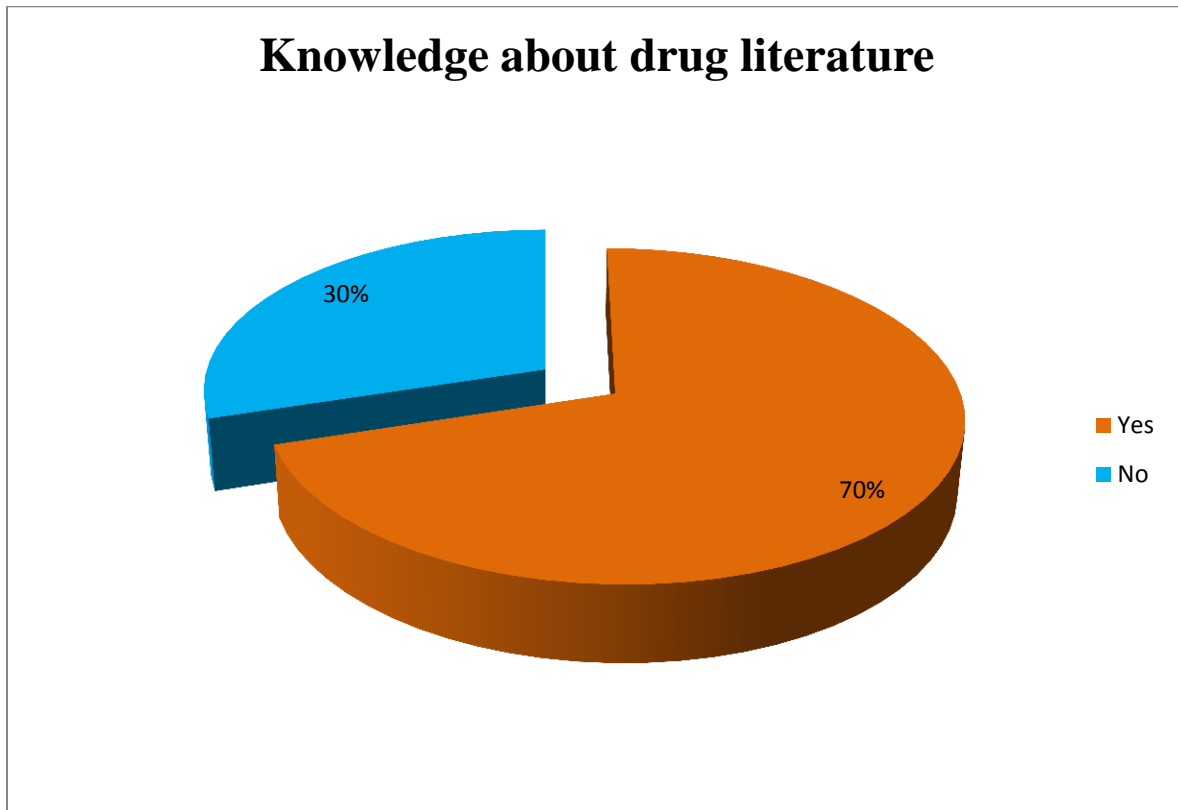
Figure 3.3.6: Knowledge about drug literature

Majority of the respondents (70%) have no knowledge about drug literature and only 30% respondents have the knowledge about the drug before administering that drug to their child.

3.3.7Source of Information regarding the drugs

Source of Information regarding the drugs
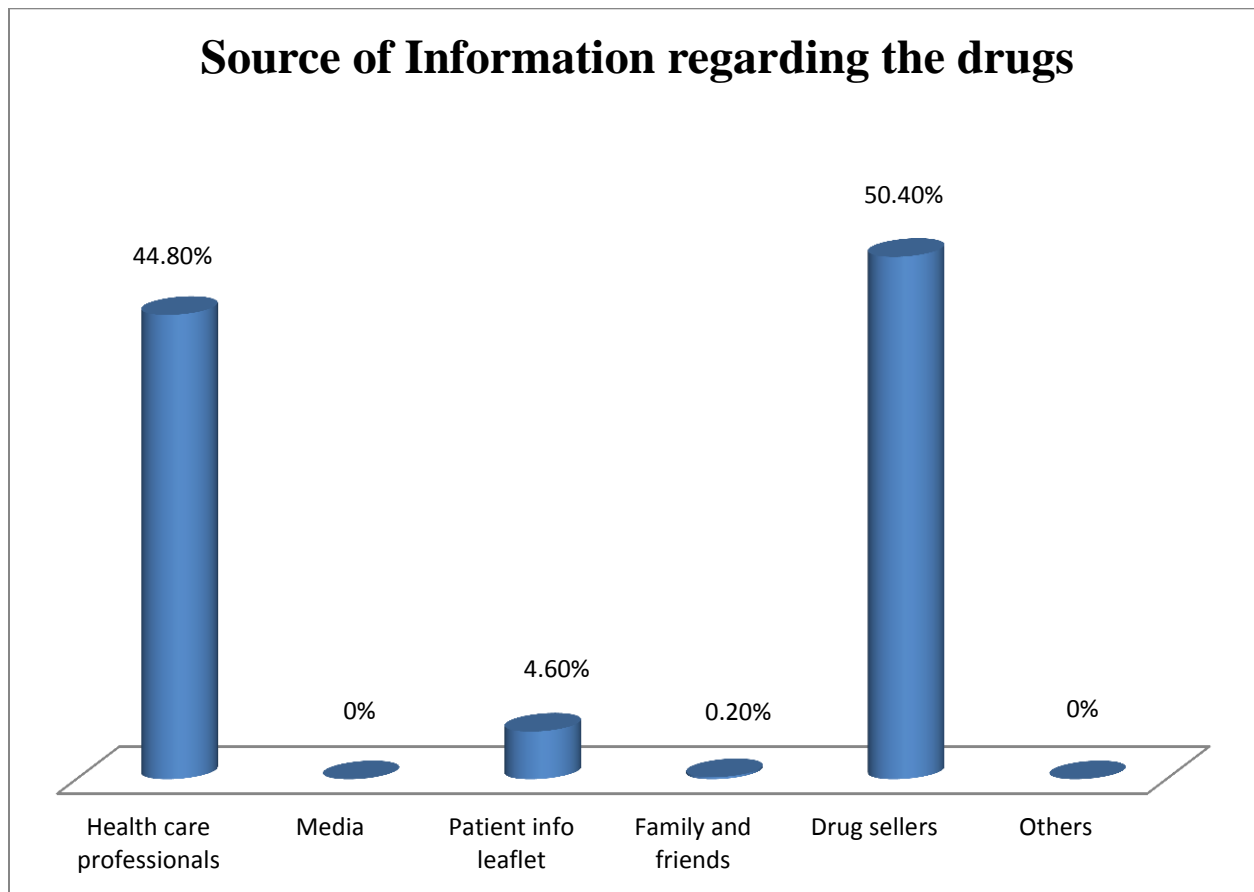
Figure 3.3.7: Source of Information regarding the drugs

50.40% respondents gathered knowledge about drug from drug sellers, 44.80% respondents gather knowledge from health care professionals, 4.6% from patient info leaflet and 0.2% from family and friends.

3.3.8 Medication source
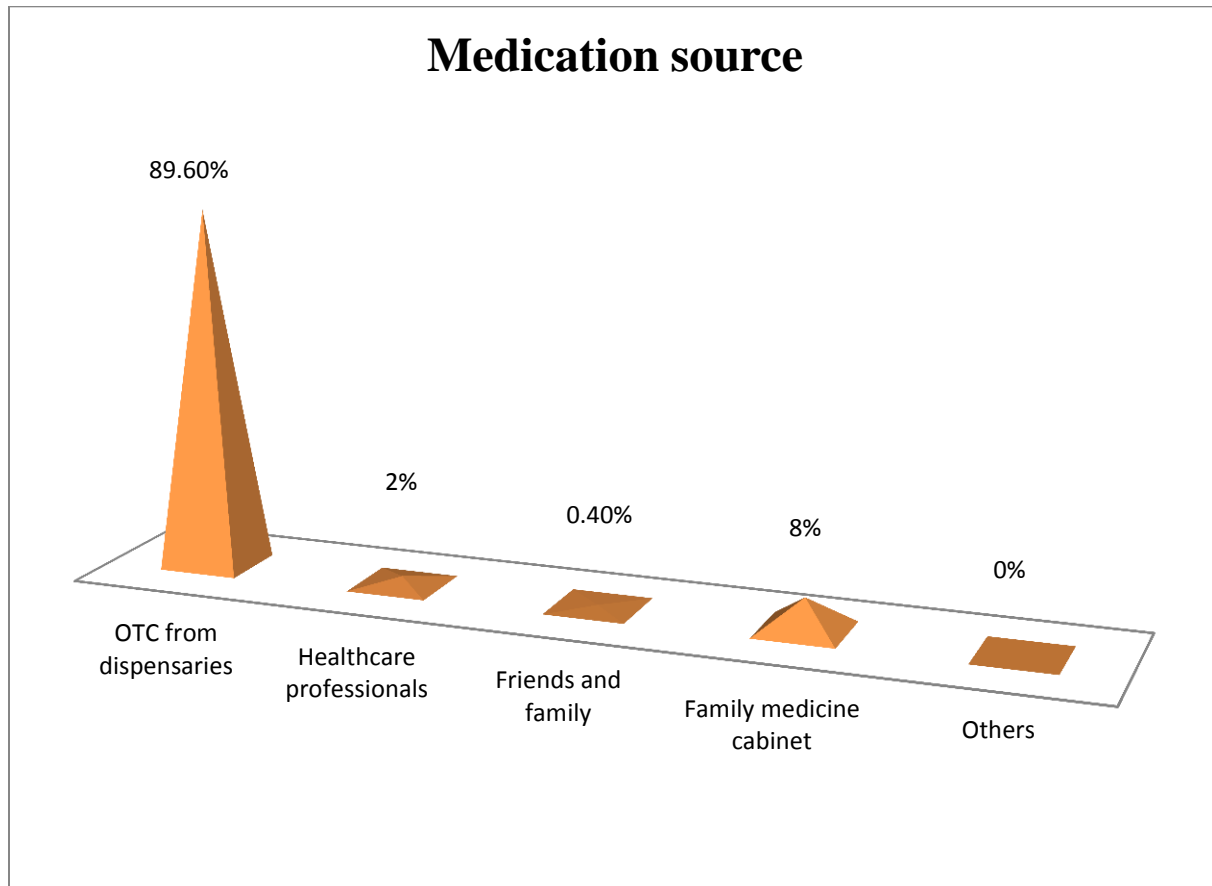
Figure 3.3.8: Medication source

Main sources of information were personnel at pharmacy dispensaries and acquainted or visited health care professionals. 8% respondents get medicine from family medicine cabinet.

3.3.9 Name of the prescribed drug
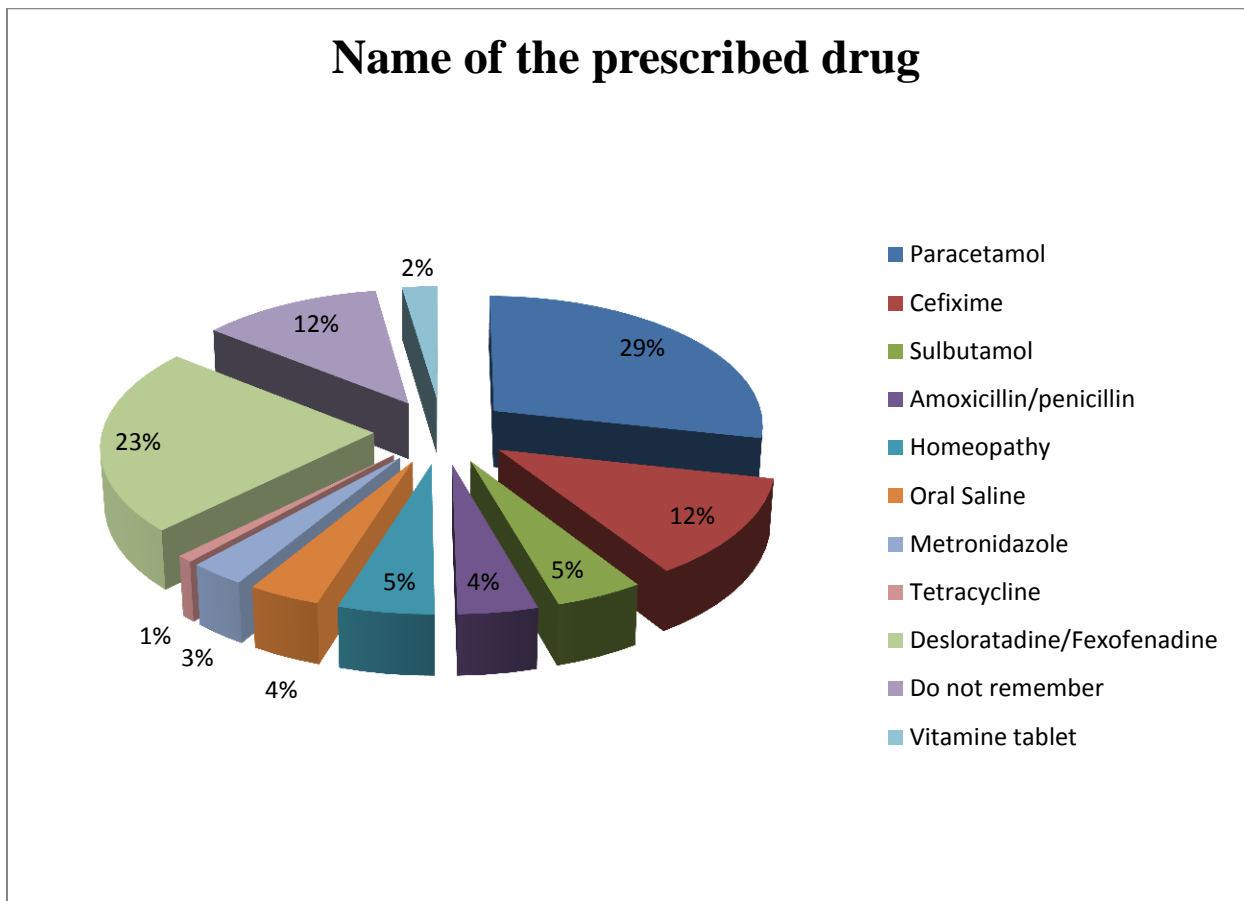
Figure 3.3.9: Name of the prescribed drug

Like self-medicated drugs, paracetamol is occupied maximum area of the above pie chart as well. Then second highest prescribed drug is desloratadine/fexofenadine.

3.3.10 Agreement to treatment schedule provided by physician

Agreement to treatment schedule

Yes
99%

No
1%
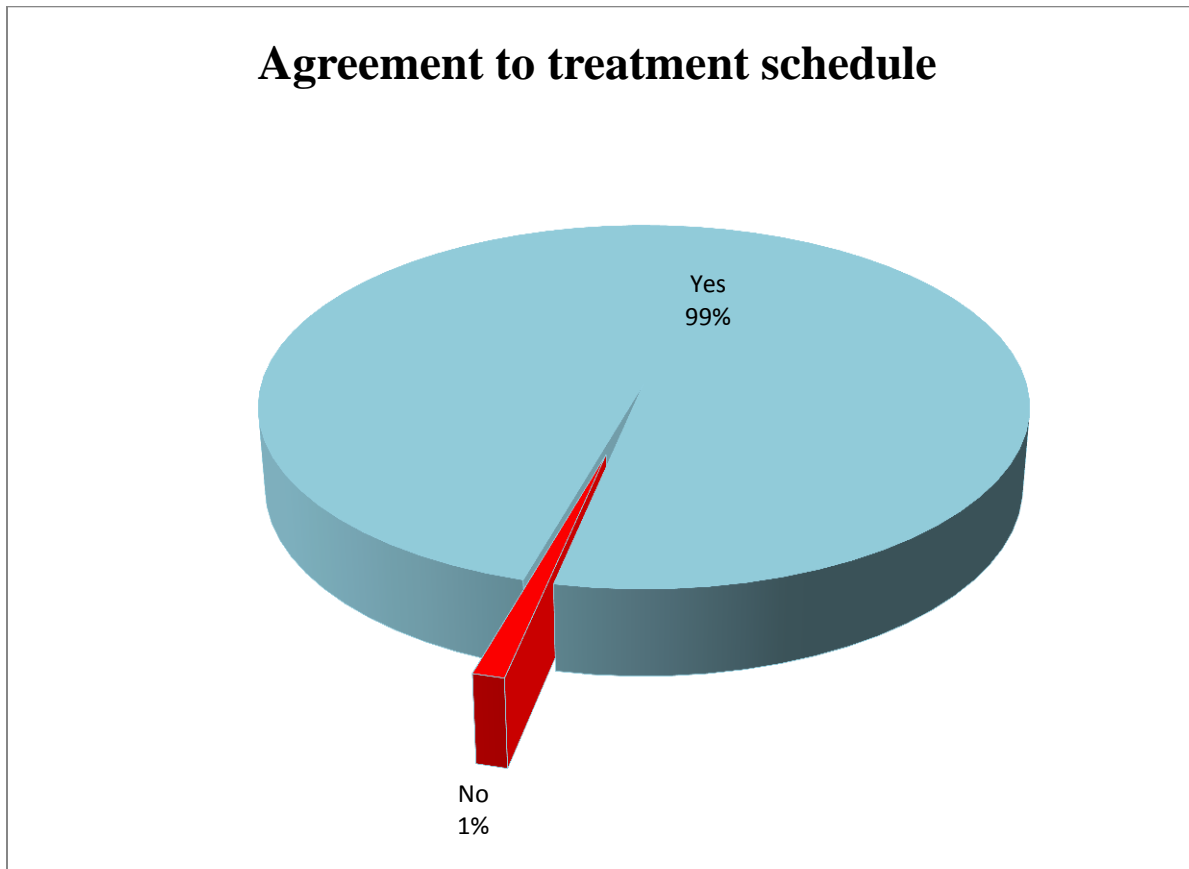
Figure 3.3.10: Agreement to treatment scheduleprovided by physician

Almost all respondents do agree to the treatment schedule provided by the doctors and only 1 % is disagreed to the treatment schedule.

3.3.11Request for medication from physician
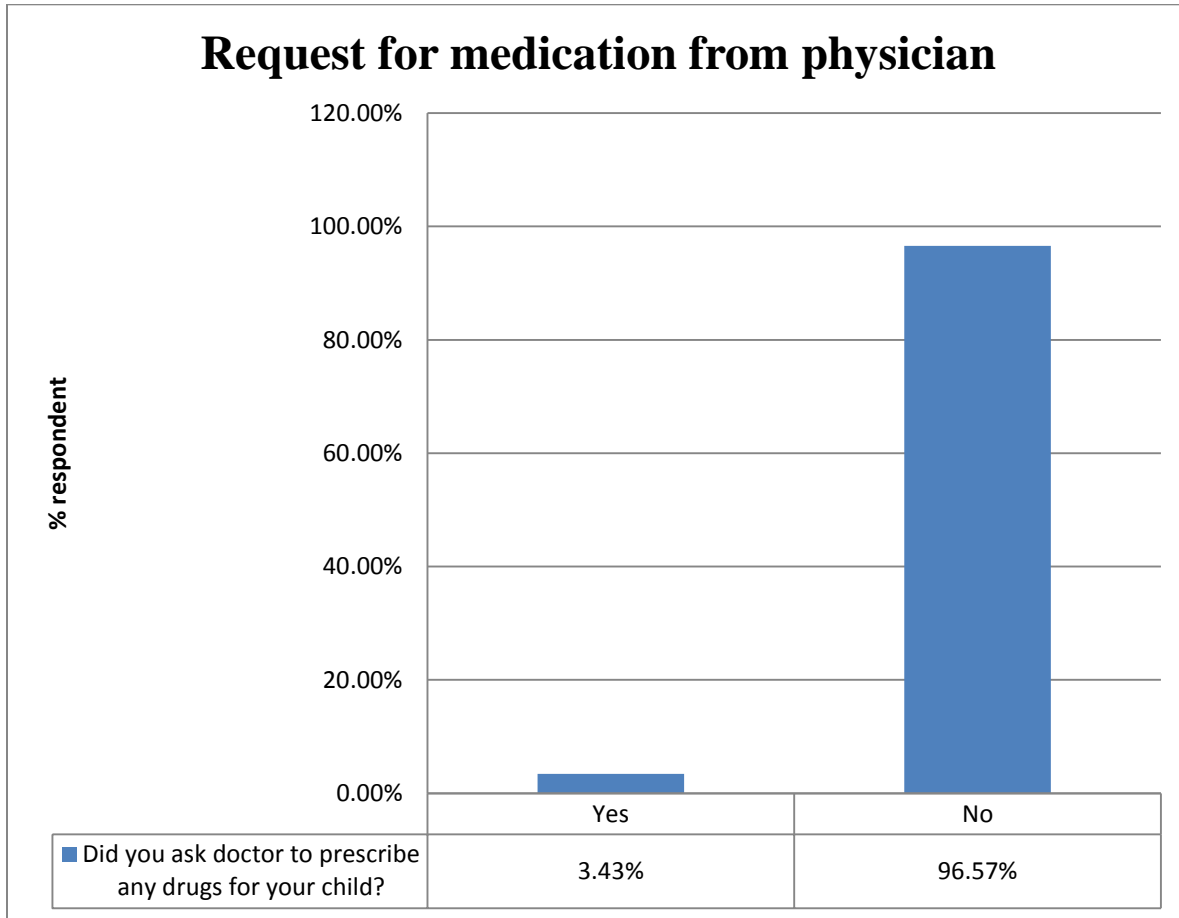
Figure 3.3.11: Request for medication from physician

Major portion of respondents do not give suggestion to doctor about medication for their child but only a few percent respondents are ask doctors to prescribed drugs.

3.3.12Request for specific medication from physician
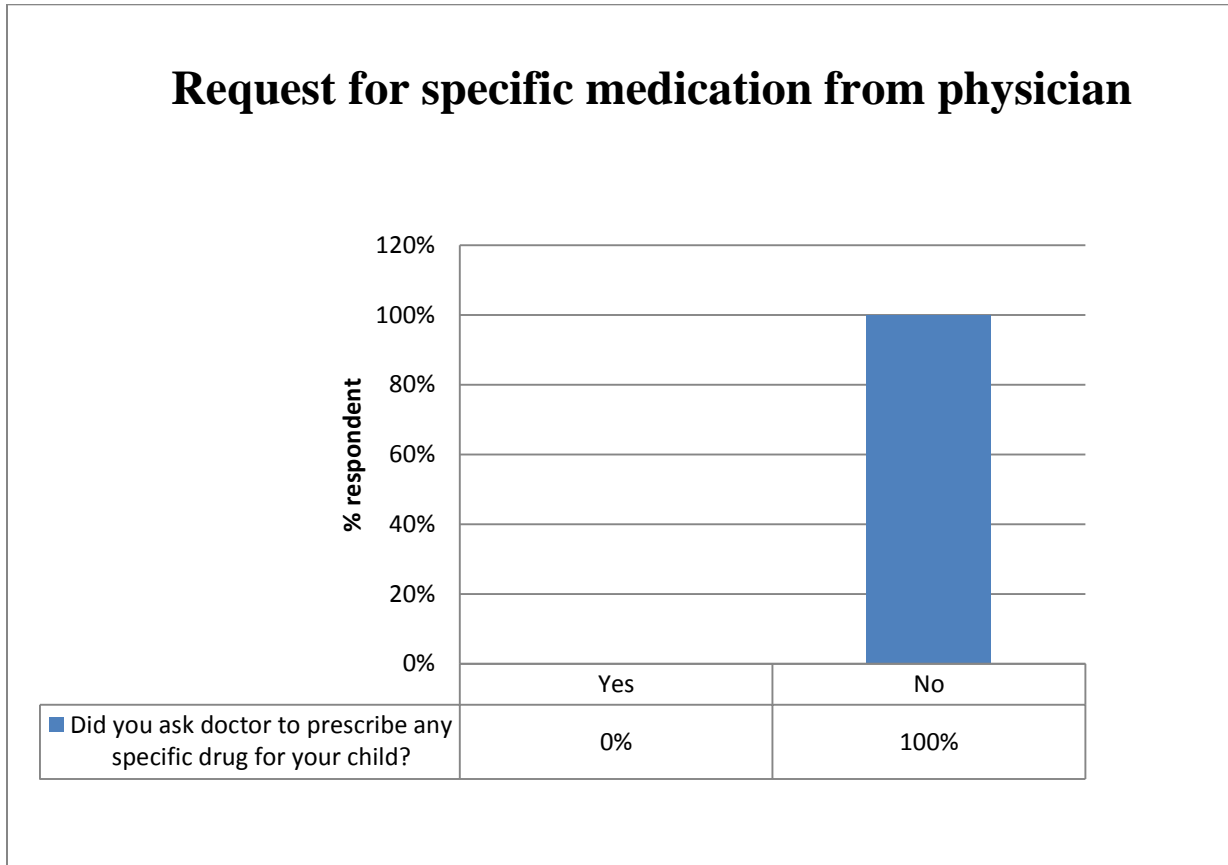
Figure 3.3.12: Request for specific medication from physician

Not a single respondent does give suggestion to doctor about specific medication for their child .

3.3.13Opinion of patients regarding prescribing tendency of physician
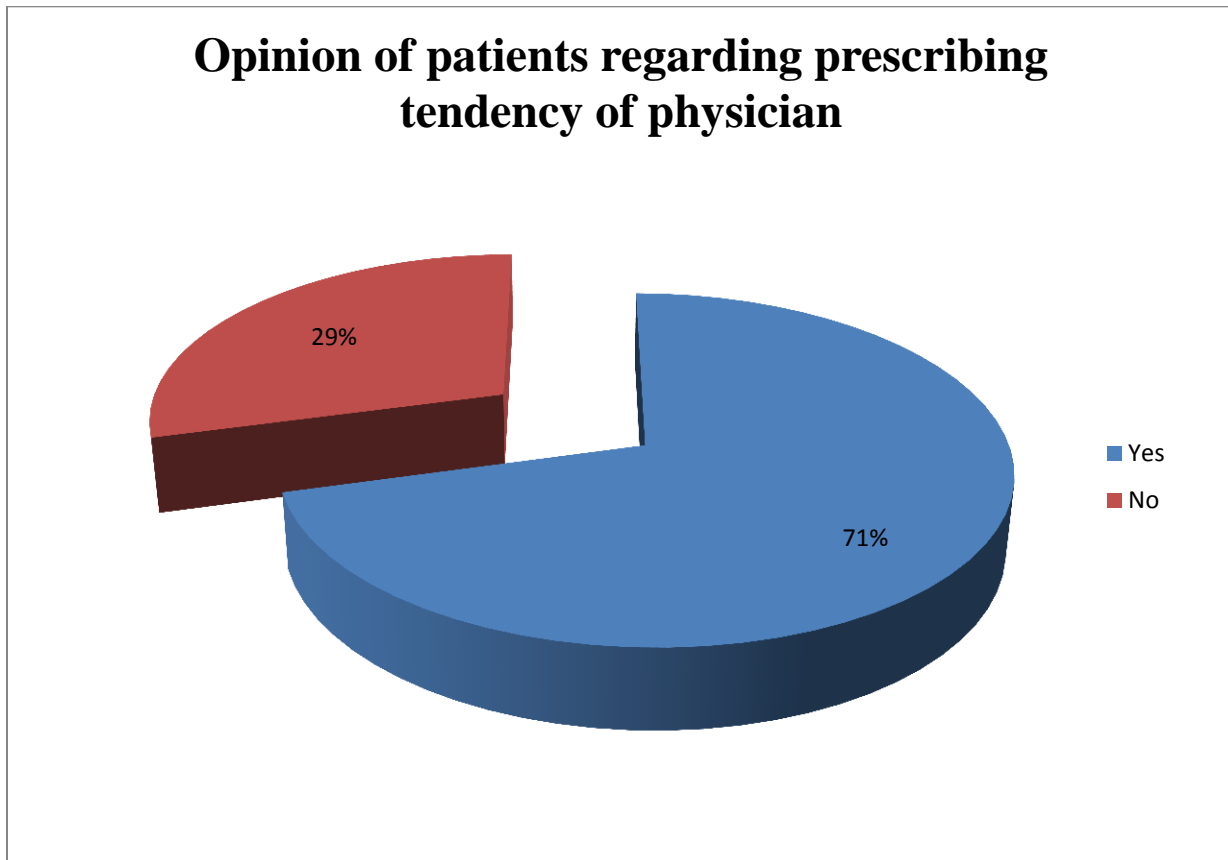
Figure 3.3.13: High tendency of prescribing medication

Maximum respondent thought and believed that doctors have high tendency of prescribing medication but 29 % people do not think so.

3.3.14 Discontinuation of the drug therapy
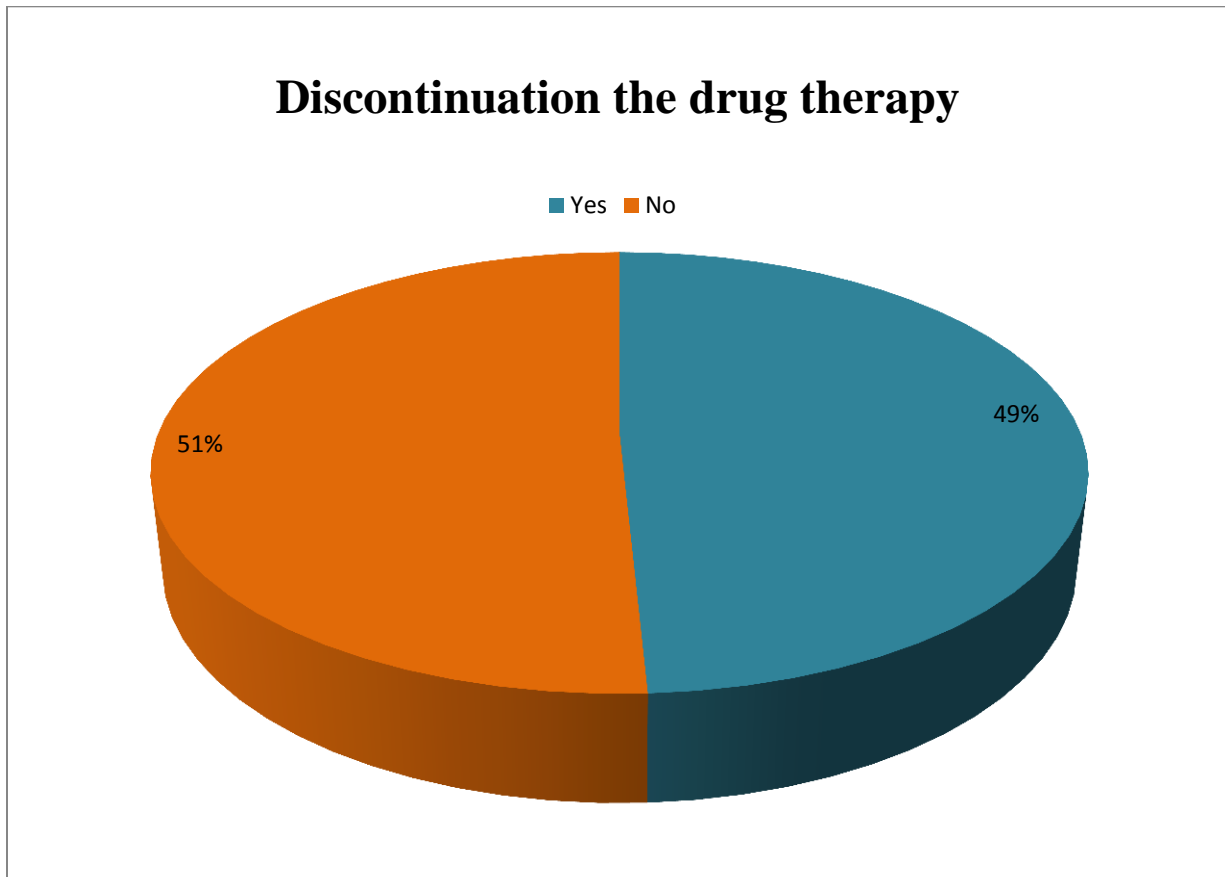
Figure 3.3.14: Discontinuation of the drug therapy

All most half of the respondents did not discontinue the drug therapy whereas another half of the respondents discontinued the therapy.

3.3.15 Reasons behind discontinuation of the therapy

Reasons behind discontinuation of the therapy

100%   0%   0%   0%   0%

symptoms have disappeared   drugs ran out   side effects appeard   child was unwilling to take medication   Others
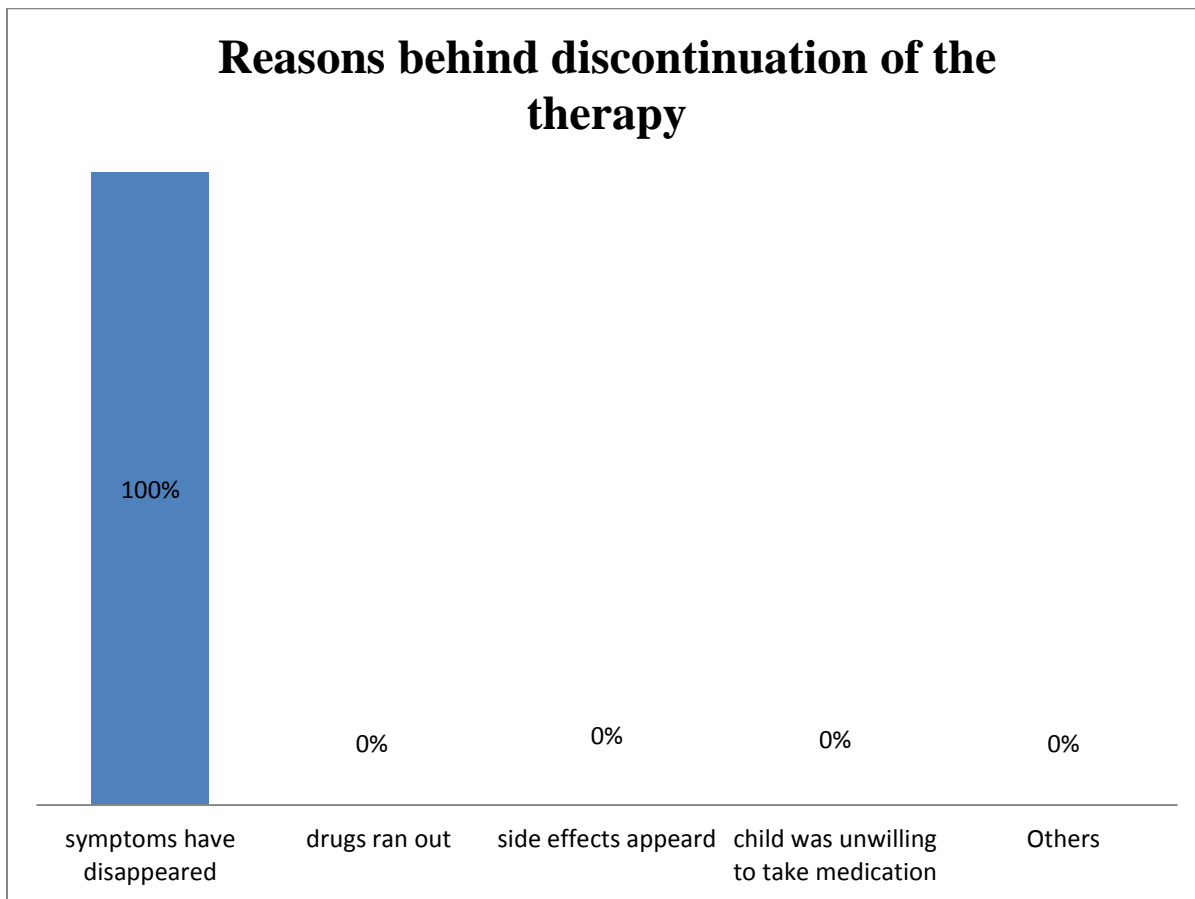
Figure 3.3.15: Reasons behind discontinuation of the therapy

All the respondents who discontinued drug therapy said that they discontinued because their symptoms had disappeared.

3.3.16 Suffering from side effect
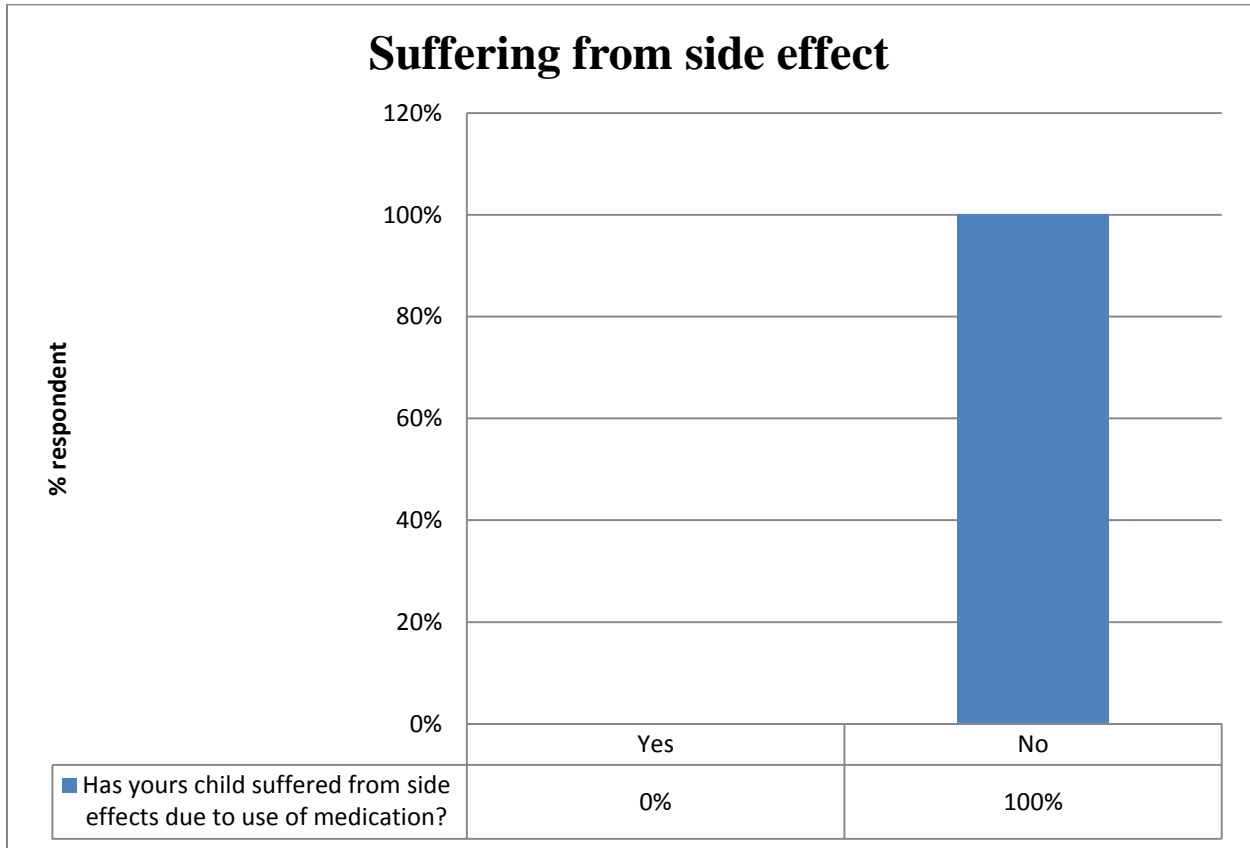
Figure 3.3.16: Suffering from side effect

None are suffering from side effect due to use of medication both prescribed and self-medicated medicines.

3.4 Status of parental understanding of antibiotic use and resistance

3.4.1 Knowledge about antibiotic resistance

Knowledge about antibiotic resistance

	Agree	Disagree	Neither agree or disagree	Do not know
■ Antibiotic resistance is promoted by using antibiotics when they are not needed	13%	1.80%	7.60%	77.60%
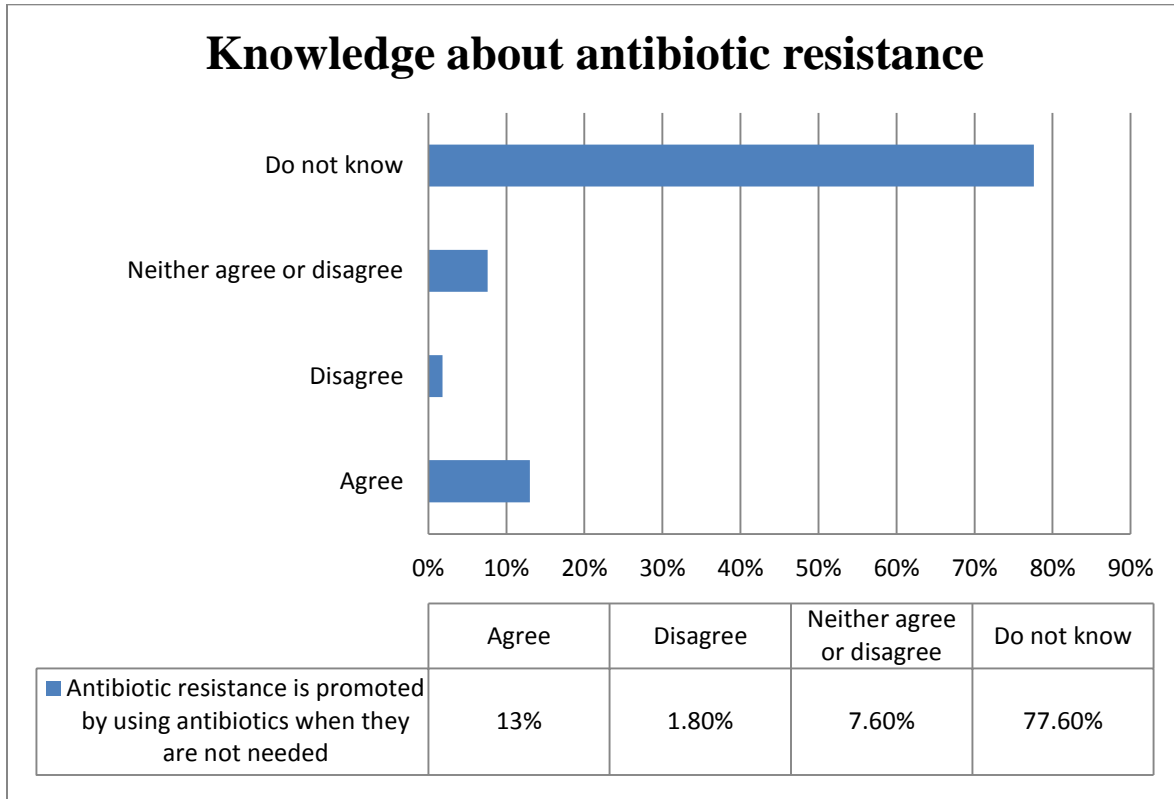
Figure 3.4.1: Knowledge about antibiotic resistance

Maximum portion of the respondents said that they do not have any idea on antibiotic resistance. They do not know whether antibiotic resistance builds up or not if the antibiotics are used when they are not needed. Only 13% respondents do agree on that statement of antibiotics resistance.

3.4.2 Antibiotic resistance is promoted by not completing full course of antibiotics

Antibiotic resistance is promoted by not completing full course of antibiotics

	Agree	Disagree	Neither agree or disagree	Do not know
■ Antibiotic resistance is promoted by not completing full course of antibiotics	12%	5%	14%	69%
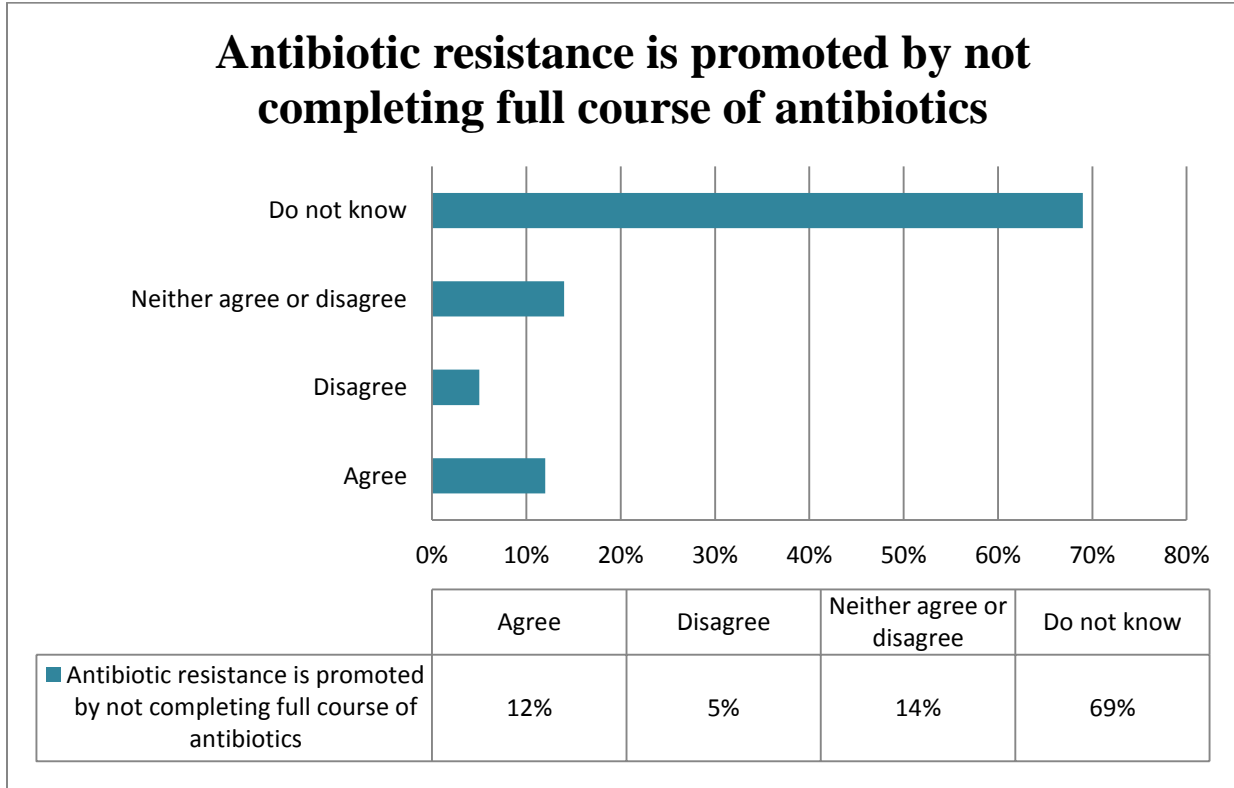
Figure 3.4.2: Antibiotic resistance is promoted by not completing full course of antibiotics

Maximum portion of the respondents said that they do not know whether antibiotic resistance builds up or not in case of the full course of antibiotic is not taken. Only 12% respondents do agree on that statement of antibiotics resistance.

3.4.3 Antibiotic resistance due to self-medication of antibiotics

Antibiotic resistance due to self medication of antibiotics

	Agree	Disagree	Neither agree or disagree	Do not know
▇ Antibiotic resistance is promoted by self medication of antibiotics	3.40%	0.40%	13%	83.20%
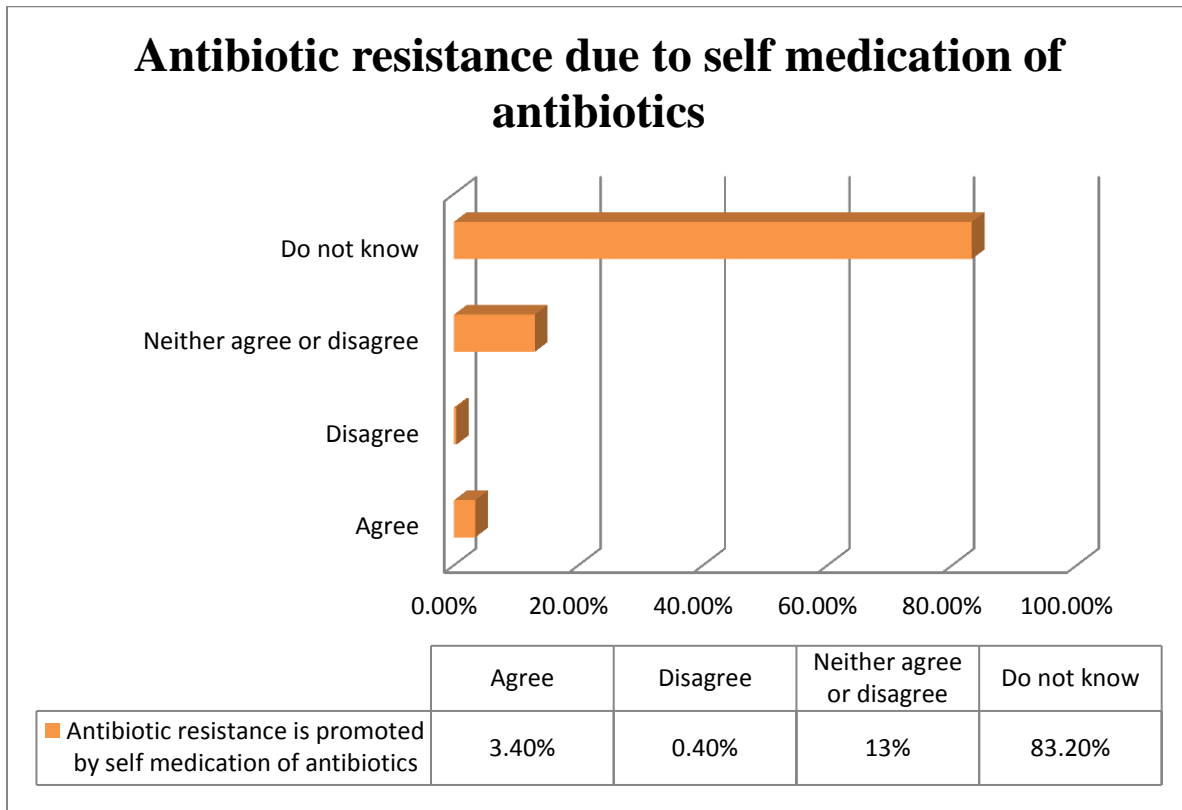
Figure 3.4.3: Antibiotic resistance due to self-medication of antibiotics

Majority of the respondents said that they do not know whether antibiotic resistance builds up or not in case of the self-medication of antibiotics. Only a few respondents do agree on that statement of antibiotics resistance

3.4.4 Antibiotic resistance is promoted by using antibiotics by using antibiotics with other drugs

Antibiotic resistance is promoted by using antibiotics with other drugs

	Agree	Disagree	Neither agree or disagree	Do not know
■ Antibiotic resistance is promoted by using antibiotics with other drugs	2.40%	1.60%	4.80%	91.20%
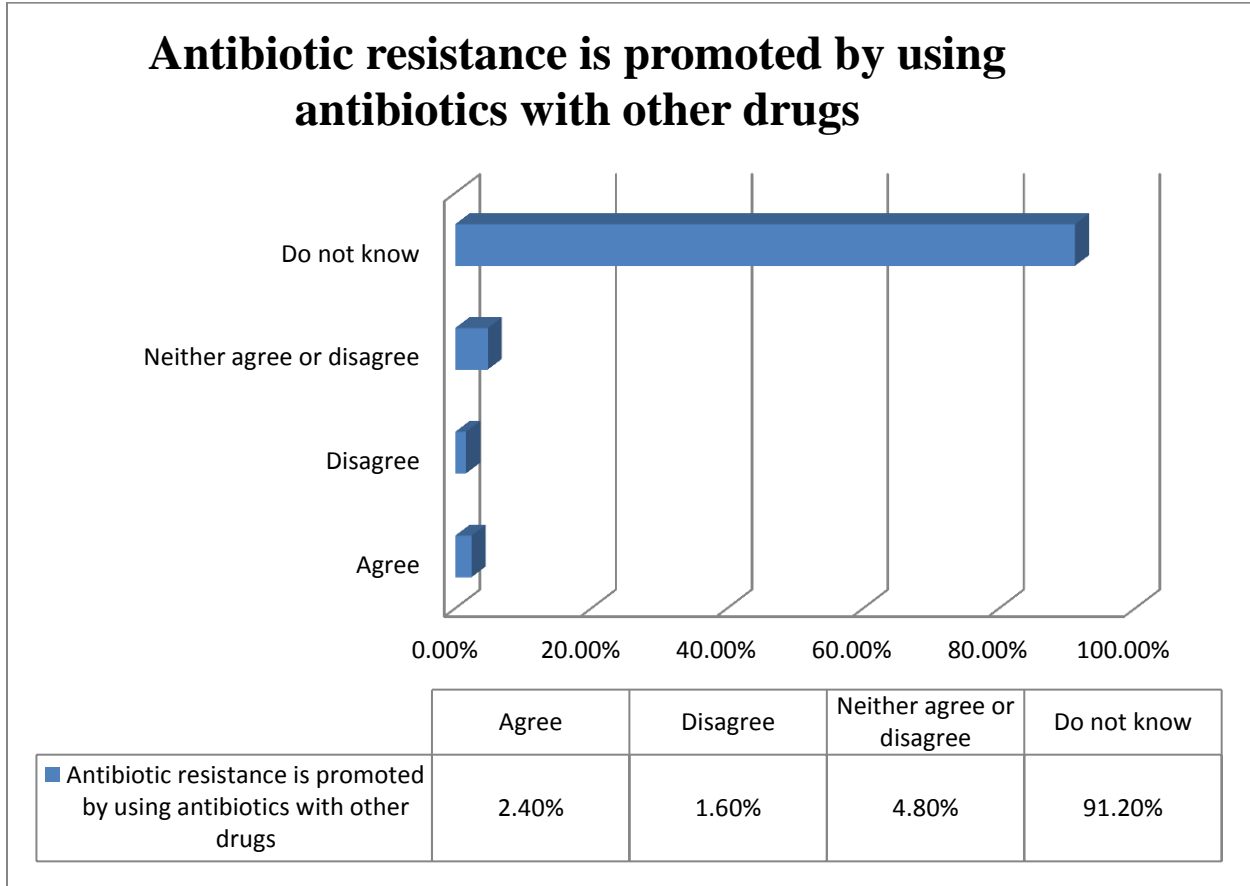
Figure 3.4.4: Antibiotic resistance is promoted by using antibiotics by using antibiotics with other drugs

Majority of the respondents do not know whether antibiotic resistance is promoted by using antibiotics with other drugs or not.

3.4.5 Viral infection with fever should be treated with antibiotics

Viral infection with fever should be treated with antibiotics

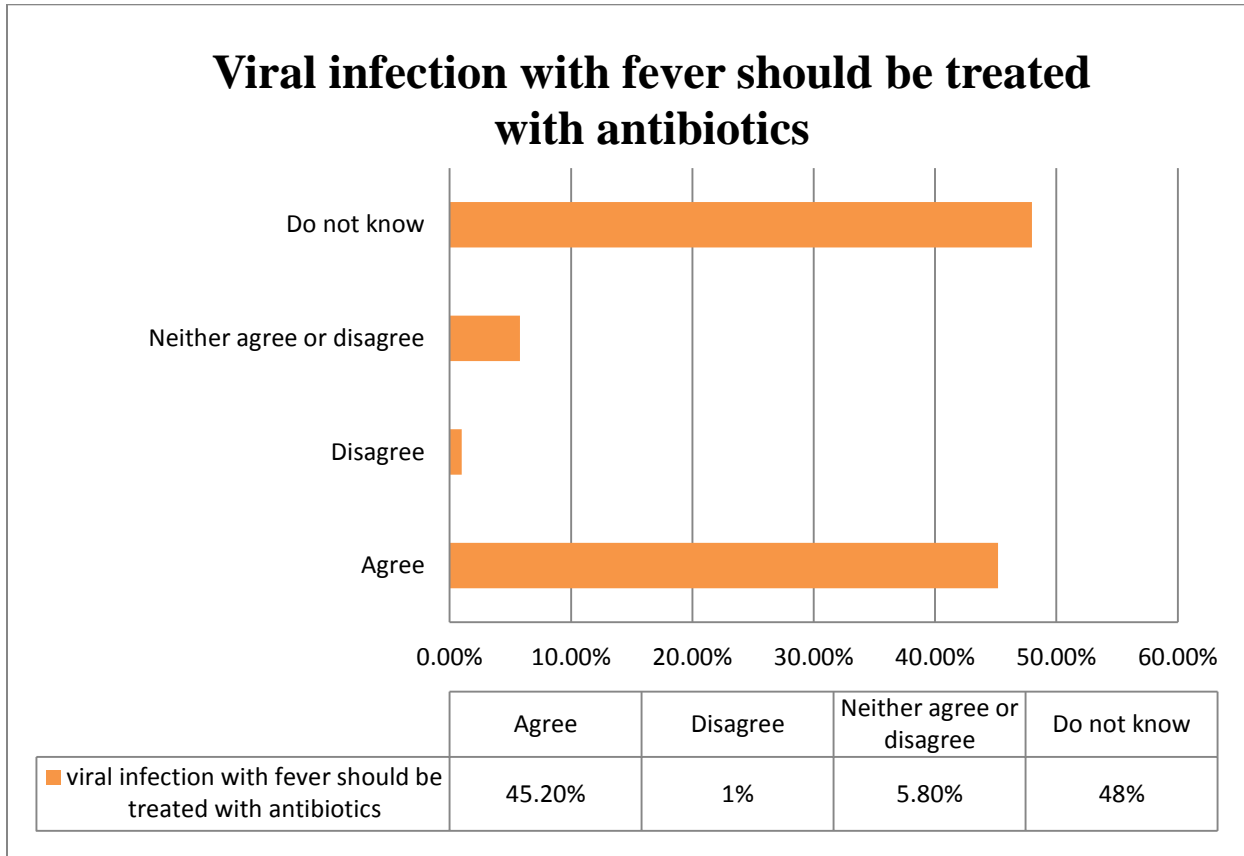|	Agree	Disagree	Neither agree or disagree	Do not know
■ viral infection with fever should be treated with antibiotics	45.20%	1%	5.80%	48%

Figure 3.4.5: Viral infection with fever should be treated with antibiotics

Half of the respondents have said that viral fever should be treated with antibiotics. Another 48% respondent said they have no idea about this statement.

3.4.6 Effectiveness of antibiotics in the treatment of same infection in future

Effectiveness of antibiotics in the treatment of same infection in future

	Agree	Disagree	Neither agree or disagree	Do not know
■ Antibiotics will always be effective in the treatment of same infection in future	34.20%	1%	6.20%	58.60%
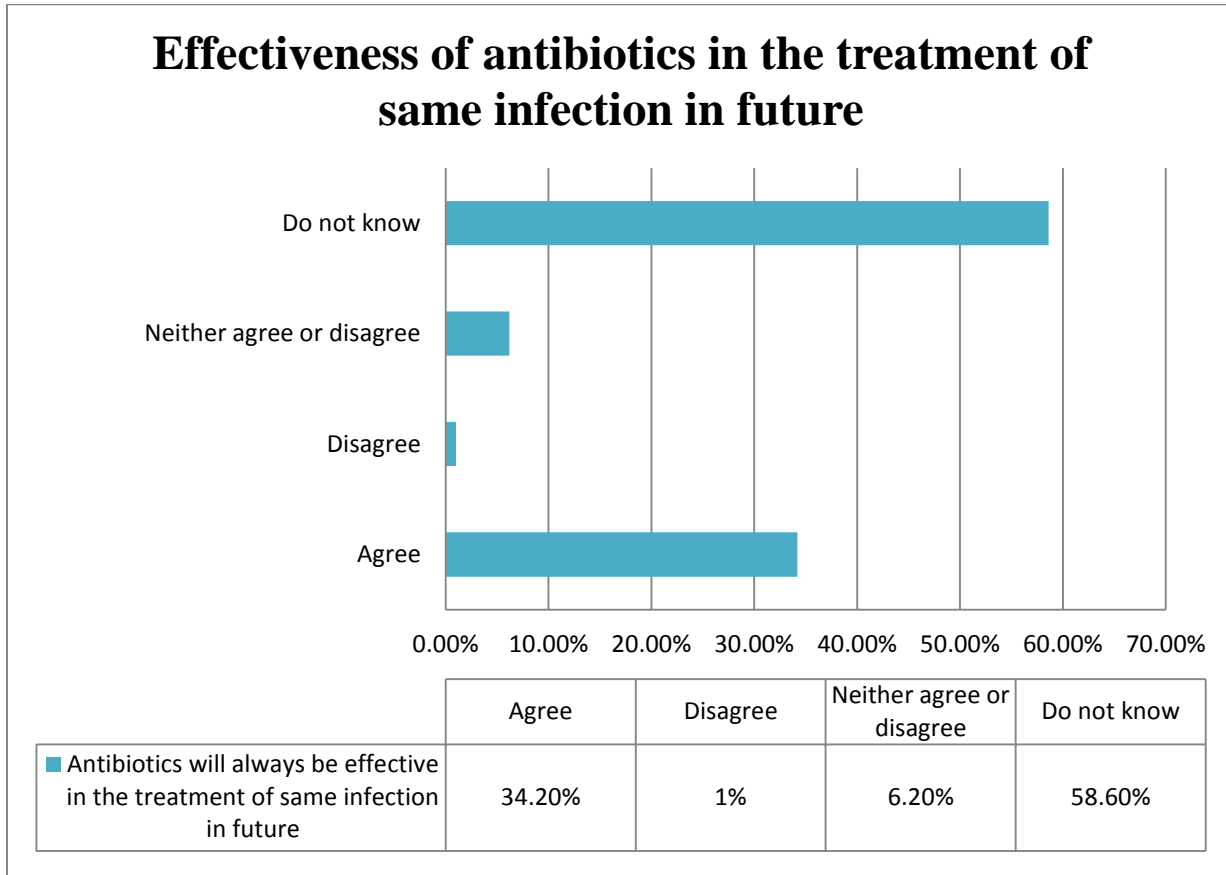
Figure 3.4.6: Effectiveness of antibiotics in the treatment of same infection in future

Majority of the respondents said that they do not know about the effectiveness of antibiotics in the treatment of same infection in future. But 34.2% respondents said that antibiotics will always be effective.

CHAPTER 4

DISCUSSION & CONCLUSION

4.1 Discussion

A study was conducted on Bangladeshi parents' practice, knowledge and attitudes of self-medication to their children in Dhaka city. From that study we can able to get an overview on parenteral attitude of self-medication, self-medication tendency among children. After this study it is seen that self-medication tendency of parents to their children varies on age, previous experience, sort of disease and monthly net house hold income.

Demographic data reveals that for most of the cases of child medication, the mother played active role in medication administration in child. Before medicating his or her child a father or a mother weighs the options for self-medicating or consulting a physician. Most of the parents either responded by self medicating (65%) or consulting a doctor (34%). If they perceived the ailment as minor then they self-medicated their child. This study showed that most parents thought of their child's condition to be fairly good.

Since majority of the responders had no health care degree, responders have shown difficulty in identifying the drugs and dosage regimen they followed for their children. Many have failed to indicate the correct schedule of medication and have no adequate idea about the side effects of the medication prior to administering the drugs. Those of the respondents, who have gathered some information about the medication, have done it from unreliable sources such as the drug sellers or incomplete sources such as packaging inserts in medication carton. Those of who received prescription from the physicians were also unable to reveal adequate knowledge about the side effects.

Many have discontinued drug therapy as symptoms disappeared which also is indicative of their lack of knowledge of the consequences. Poor adherence to medication in this study may be due to parents not being informed or instructed properly on the importance of completion of therapy.

Many who have visited the doctors thought that physicians prescribe drugs too easily to the children. Parents who consulted to physician, most of them were agreed with the treatment schedule provided by the physician, although there are 3.43% parents who requested physician to give medicine to their children because they thought medicine is only requirement for their

children. It is not a big deal to them weather the illness of their child is minor or not. They thought their children must need medicine. But none of them had requested for a specific drug to physician. Most of the children self medicated are above 1 year of age. Children less than 1 year are not self medicated because parents do not want to take any risk with such small children and that they do not enough experience with medication. There were no gender discrimination for providing medication.

Most common source of their medication (upon prescription or for self medication) was the drug sellers. The not-so-strict enforcement of medical laws and regulations in Bangladesh enable clinic dispensers and pharmacists to sell the drugs to the people over-the-counter without a doctor's prescription. These attitudes were also due to lack of knowledge and awareness of the parents of the unnecessary undesirable effects and outcomes to the children as well as increasing bacterial resistance.

When the parents were asked about antibiotic resistance then most of the respondents said that they do not have any idea about antibiotic resistance. This is because only few percent parents have health care degree and they are not supposed to know about antibiotic resistance. Most of the parents even do not know whether antibiotics are effective or not in the treatment of same infection in future if the full courses of the therapy do not maintained properly. They even do not know whether antibiotics are effective or not in viral fever. But most shocking thing is that about 45% parents agreed with the statement of viral infection with fever should be treated with antibiotics because they thought antibiotics are used against virus. Though 26% of the respondents have university level educational qualification but they do not have the knowledge about antibiotic resistance.

Besides this, education levels of parents also an important factor. Majority of the respondents (74%) have educational qualification within or below class 12 equivalent. Only few have university level educational qualification. Most of the cases, it is seen that they do not feel the urge to consult a physician. In some cases, they self-medicated antibiotic, because they do not know about antibiotic resistance or how antibiotic resistance grow up or promoted. This is possible because among the respondents only 1% respondent has health care degree.

Most of the children (44%) suffered from fever. Some of them were also suffered from common cold and respiratory disease like pneumonia, asthma (32.44%). Few are suffered from some gastrointestinal disease like blood dysentery, diarrhea, food-poisoning. From this study it is seen that paracetamol, metronidazole, desloratadine, fexofenadine are the most common self-medicated medicine. Although their children suffered from diseases during at least last 6 months but the thing is that their parents thought their child's health status is good enough.

There are limitations in this study. This study may be representing the city population but may not necessarily represent the population in a more rural area or more affluent section of the population of Bangladesh. As with studies of this nature, this study relied on self-reporting. It is not known how accurately parents recall actual experience with medication. And parental reports of their behavior may not always correspond to their actual behavior. Some parents may not have answered the questionnaire correctly and truthfully. This could have been because they were in a hurry to go home and the sick child they brought for consultation may have been interrupting the interview.

4.2 Conclusion

Self-medication is a necessary and important aspect of primary health care which if properly managed could be incorporated in the health care delivery system to reduce the burden on the secondary and tertiary level so that attention could be focused on the more serious health problems. But in case of self-medication parents should be more aware about the medicine which is administered. Form this study it has been proved less awareness towards usage of antibiotics by both physician and parents. Parents have to be concerned about antibiotics; they should not self-medicated antibiotics to their children.

Chapter 5

References

5. References

Afolabi, A. O. "Self Medication, Drug Dependency And Self-Managed Health Care – A Review". *Public Health – Social and Behavioral Health*. N.p., 2015. Web. 29 Dec. 2015.

Alternatives in Treatment, (2015). *The Dangers of Self-Medicating with Prescription and OTC Drugs*. [online] Alternatives in Treatment. Available at: http://The Dangers of Self-Medicating with Prescription and OTC Drugs [Accessed 23 Jan. 2016].

AL-AZZAM, S., AL-HUSEIN, B., ALZOUB, F., MASADEH, M., ALI, M. and AL-HORAN, S. (2007). *nternational Journal of Occupational Medicine and Environmental Health 2*, 20(4), pp.373 – 380.

Alghanim, S.A. "Self-Medication Practice Among Patients In A Public Health Care System". 17.5 (2011): n. pag. Print.

Bennadi, D. (2014). Self-medication: A current challenge. *J Basic Clin Pharma*, 5(1), p.19

CDC, (2015). Antibiotic / Antimicrobial Resistance | CDC. [online] Cdc.gov. Available at: http://www.cdc.gov/drugresistance/ [Accessed 23 Jan. 2016].

Chan, G. and Tang, S. (2006). Parental knowledge, attitudes and antibiotic use for acute upper respiratory tract infection in children attending a primary healthcare clinic in Malaysia. Singapore Med J., 47(4), pp.266-70.

Chipwaza, Beatrice et al. "Self-Medication With Anti-Malarials Is A Common Practice In Rural Communities Of Kilosa District In Tanzania Despite The Reported Decline Of Malaria". *Malar J* 13.1 (2014): 252. Web. 29 Dec. 2015.

Grigoryan, L., Haaijer-Ruskamp, F., Burgerhof, J., Mechtler, R., Deschepper, R., Tambic-Andrasevic, A., Andrajati, R., Monnet, D., Cunney, R., Di Matteo, A., Edelstein, H., Valinteliene, R., Alkerwi, A., Scicluna, E., Grzesiowski, P., Bara, A., Tesar, T., Cizman, M., Campos, J., Lundborg, C. and Birkin, J. (2006). Self-medication with Antimicrobial Drugs in Europe. Emerg. Infect. Dis., 12(3), 452-459.

GEISSLER, P WENZEL et al. "Self-Treatment By Kenyan And Ugandan Schoolchildren And The Need For School-Based Education". *HEALTH POLICY AND PLANNING* 16.4 (2001): 362–371. Print

Healing is Essential, (2013). Reasons against self-medication. [online] Available at: http://Reasons against self-medication [Accessed 23 Jan. 2016].

Horton, S. and Stewart, A. (2011). Reasons for Self-Medication and Perceptions of Risk Among Mexican Migrant Farm Workers. Journal of Immigrant and Minority Health, 14(4), 664-672.

Hughes, C., McElnay, J. and Fleming, G. (2001). Benefits and Risks of Self Medication. *Drug Safety*, 24(14), 1027-1037.

Ibrahim Sharif, S. and Suleiman Sharif, R. (2013). Antibiotics Use With and Without a Prescription in Healthcare Students. *AJPS*, [online] 1(5), pp.96-99. Available at: http://pubs.sciepub.com/ajps/1/5/5/index.html [Accessed 30 Dec. 2015].

Jain, Sonam, Reetesh Malvi, and Jeetendra Kumar. "Concept Of Self Medication: A Review". *International Journal of Pharmaceutical & Biological Archives* 2.3 (2011): 831-836. Print

Khalil, H., Abdullah, W., Khawaja, N., AlSalem, A., AlHarbi, S., Salleeh, H. and Shah, A. (2013). Self-prescribed antibiotics by Saudi patients as a routine self-management of dental problems. Life Science Journal, 10(4), 1939-1942.

kI, A. and DG, I. (1998). Prescription and nonprescription analgesic use in Sweden. *Ann Pharmacother*,[online]32(4), pp.485-94. Available at: http://www.ncbi.nlm.nih.gov/pubmed/9562147 [Accessed 30 Dec. 2015]

MedicineNet, (2016). Antibiotic Resistance (Drug Resistance, Antimicrobial Resistance) Symptoms, Causes, Treatment - Diagnosis of antimicrobial drug resistance - MedicineNet. [online] Available at: http://www.medicinenet.com/antibiotic_resistance/page5.htm [Accessed 23 Jan. 2016].

Mohanna, M. (2010). Self-medication with Antibiotic in Children in Sana'a City, Yemen. Oman Medical Journal, 25(1).

Mumtaz Y , Jahangeer S.M. A, Mujtaba T , Zafar S, Adnan S (2011) "Self Medication Among University Students Of Karachi" *journal of Liaquat University Medical and Health Science*, 10(03), 102-105.

Oshikoya, K. and Senbanjo, I. (2010). Providing safe medicines for children in Nigeria: The impediments and remedies. Ann Afr Med, 9(4), 203.

Self-Treatment With Herbal And Other Plant-Derived Remedies — Rural Mississippi, 1993". *Morbidity and Mortality Weekly Report* 44.11 (1995): 204-207. Print

Sawair, F., Baqain, Z., Abu Karaky, A. and Abu Eid, R. (2009). Assessment of Self-Medication of Antibiotics in a Jordanian Population. Med Princ Pract, 18(1), 21-25.

S, G., Selvaraj, K. and Ramalingam, A. (2014). Prevalence of self-medication practices and its associated factors in Urban Puducherry, India. Perspect Clin Res, 5(1), 32.

Togoobaatar, G., Ikeda, N., Ali, M., Sonomjamts, M., Dashdemberel, S., Mori, R. and Shibuya, K. (2010). Survey of non-prescribed use of antibiotics for children in an urban community in Mongolia. *Bulletin of the World Health Organization*, 88, pp.930-936.

WHO, (2016). *The Role of the Pharmacist in Self-Care and Self-Medication: 2. Definitions: Self-medication*. [online] Apps.who.int. Available at: http://apps.who.int/medicinedocs/en/d/Jwhozip32e/3.2.html [Accessed 23 Jan. 2016].

WHO, (2016). *Guidelines for the Regulatory Assessment of Medicinal Products for Use in Self-Medication: 1. Introduction: 2.4 Characteristics of self-medication*. [online] Apps.who.int. Available at: http://apps.who.int/medicinedocs/en/d/Js2218e/1.1.html [Accessed 23 Jan. 2016].

WMA, (2002). *WMA Statement on Self-medication*. [online] WMA. Available at: http://Hughes, C., McElnay, J. and Fleming, G. (2001). Benefits and Risks of Self Medication. Drug Safety, 24(14), pp.1027-1037. [Accessed 23 Jan. 2016].

World Self Medication Industry,. "The Story Of Self Care And Self Medication". N.p., 2006. Web. 29 Dec. 2015.