

**A survey on drug dispensing patterns by drug  
retailers in Bangladesh**

*A dissertation submitted to Department of Pharmacy,*

*East West University, in Partial fulfillment of the requirements for the  
Degree of Master of Pharmacy*

*(M. Pharm)*

***Submitted by***

***Md. Feroz Ahmed***

***ID- 2013-03-79-004***

***Department of Pharmacy***

***East West University***

***July, 2015***

***Research Invigilator***

***Farhana Rizwan***

***Assistant Professor***

***Department of Pharmacy***

*Dedicated To My  
Parents  
&  
Honourable  
Teachers*

### **Declaration by the Candidate**

I, Md.Feroz Ahmed (ID-2013-3-79-004), hereby declare that the dissertation entitled “A survey on drug dispensing patterns by drug retailers in Bangladesh” submitted by me to the Department of Pharmacy, East West University, in the partial fulfillment of the requirements for the degree of Masters Of Pharmacy. This is a genuine & authentic thesis work carried out by me during Fall 2014 –Spring-2015 under the supervision and guidance of Farhana Rizwan, Assistant Professor, Department of Pharmacy, East West University.

.....  
Md.Feroz Ahmed

ID: 2013-3-79-004

Department of Pharmacy

East West University

Aftabnagar, Dhaka.

### **Certified by the Invigilator**

This is to certify that the dissertation, entitled “A survey on drug dispensing patterns by drug retailers in Bangladesh”, is a thesis work done, under our guidance and supervision, by Md.Feroz Ahmed(ID-2013-03-79-004), in partial fulfillment of the requirements for the degree of Masters of Pharmacy. We further certify that all the sources of information and all facilities availed in this connection is duly acknowledged.

.....

Farhana Rizwan  
Supervisor,  
Assistant Professor, Department of Pharmacy  
East West University  
Aftabnagar, Dhaka.

---

### Endorsement by the Chairperson

This is to certify that the dissertation, entitled “A survey on drug dispensing patterns by drug retailers in Bangladesh”, is a thesis work done, by the Md.Feroz Ahmed (ID-2013-03-79-004), in partial fulfillment of the requirements for the degree of Masters of Pharmacy. We further certify that all the sources of information and all facilities availed in this connection is duly acknowledged.

.....  
Dr. Samshun Naher Khan  
Chairperson,  
Department of Pharmacy  
East West University  
Aftabnagar, Dhaka.

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## A survey on drug dispensing patterns by drug retailers in Bangladesh



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## Abstract

The present survey was carried out to “Drug dispensing patterns by drug retailers in Bangladesh”. All data of this survey is collected from 435 pharmacies of 12 thanas of 5 districts by questionnaires method.

This survey is carried out for observation of knowledge of drug retailers about actual causes, sign, symptoms & treatment pattern of following diseases are right site upper abdominal pain, fever, diarrhoea & urinary tract infection.

For right site upper abdominal pain only 7.6% retailers referred to doctors & 92.4% retailers prescribed drugs to relief pain. For fever 88.9% retailers prescribed antibiotics, 2.1% non antibiotic & 9.0% referred to doctors. For diarrhoea 89.0% retailers prescribed antibiotics, 8.5% non antibiotic & 2.5% referred to doctors. For UTIs 71.8% retailers prescribed antibiotics, 1.4% non antibiotic & 26.8% referred to doctors.

91.0% retailers think that causes of upper site abdominal pain are acidity, 3.4% liver infection & 5.5 % don't know about causes of upper site abdominal pain. For fever 39.3% has said fever may occurred by seasonal change, cold, pain, infection, mosquito & 47.8% said causes of fever is virus. Only 4.1% think that a cause of fever is bacteria & 8.7% don't know about causes of fever. For diarrhoea 93.1% retailers said causes of diarrhoea are food poisoning, water, Cold & 5.1 % said diarrhoea may occurred by bacteria or virus & 1.8% don't know about causes of diarrhea. For UTI 69.2% retailers assume that causes of UTIs are sexual relation, dirty, menstruation, masturbation & 5.5% said UTIs occurred through bacteria or virus & 25.5% don't causes of UTIs.

For right site upper abdominal pain 3.7% retailers involve with poly pharmacy & 96.3% non poly pharmacy. For fever 3.4% retailers involve with poly pharmacy & 96.6% non poly pharmacy. For diarrhoea 42.8% retailers involve with poly pharmacy & 57.2% non poly pharmacy. For UTIs 9.4% retailers involve with poly pharmacy & 90.6% non poly pharmacy.

From this survey it has found that most of retailer does not know actual causes, sign & symptoms of these diseases. Most of them use more & unnecessary drug for their daily practices. For their irrational use of drug cause increases drug wastage & resistance, also increases health hazard, morbidity & mortality rate of patients.

Treatment against causes of fever 36.09% retailers prescribe antibiotics against seasonal change, pain, cold, infection, mosquito, 44.59% retailers prescribe antibiotics against virus 3.44% retailers prescribe antibiotics against bacteria, 4.82% retailer prescribe non antibiotics, 2.06% retailers prescribe antibiotics although they have no any idea about causes of fever & 8.96% retailers referred to doctor. Treatment against causes of diarrhoea 84.1% retailer prescribe antibiotics against Food poisoning,

Cold & Water, 4.36% retailers prescribe antibiotics against virus or bacteria, 0.45% retailers prescribe antibiotics although no any idea causes of diarrhoea, 8.50% prescribe non antibiotics & 2.52% retailer referred to doctor.

Treatment against causes of UTIs 61.14% retailers prescribe antibiotics against sexual relation, 5.28% retailer prescribe antibiotics against infectious, 5.97% retailers prescribe antibiotics although they have no any idea about causes of UTIs 1.3% retailers prescribe non antibiotics & 26.20% retailers referred to doctor.

For the treatment of upper site abdominal pain 11.7% prescribe single drug, 80.7% prescribe more than one drug & 7.6% referred to doctors. For the treatment of fever prescribe 7.0% single drug, 54.0% prescribe more than one drug & 39.0% referred to doctors. For the treatment of diarrhoea prescribe only 0.7% single drug, 88.3% prescribe more than one drug & 11.0% referred to doctors. For the treatment of UTIs prescribe 6.9% single drug, 66.9% prescribe more than one drug & 26.2% referred to doctors.

Educational qualification of retailers those are involved to prescribe drugs against various diseases 20.7% SSC, 41.4% HSC, 19.1% Degree, 5.3% Masters in arts, only 2.3% Paramedical & 1.8% Diploma in Pharmacy & others 8.73%.

In conclusion, from the survey it has found that most of the retailers of Bangladesh have not actual knowledge about diseases, their primary causes & treatment.

**Keywords:** Dispensary, Drug dispensing, Treatment, Health problem.



# **CHAPTER 1**

## **INTRODUCTION**

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## 1.1. Introduction:

Drug dispensing by retailers is most common in the over world mostly in developing countries. Bangladesh is one of them. Most peoples of Bangladesh are poor & they are unable to get good facilities of appropriate treatment in primary health care system due to lack of medicine & others facilities. Most of them involve with self medication. Many people take medicine directly with the consultation of retailers of dispensary because of financial problem & distances of hospital. Most retailers have not sufficient knowledge about diseases & their sign, symptoms & causes. They use unnecessary medicines in confusion stages or to make a profit by selling of medicines to their customers as a result increases misuse, abuse & wastage of drug day by day. Most of them use higher antibiotics for treatment without any prescription or diagnosis. Wrong treatment increases rate of drug resistance, financial wastage, morbidity & mortality rate. According to the drug ordinance, 1982 No person, being a retailer, shall sell any drug without the personal supervision of a pharmacist registered in any Register of the Pharmacy Council of Bangladesh: Provided that this provision shall not apply to the retail sale of any drug under the ayurvedic, unani, or homeopathic or biochemic [ system of medicine or herbal drugs] but 100% retailers of pharmacies don't obey this rule. A report of 1997 it has been found that rural prescriber prescribe 66% antibiotics in their prescription in Bangladesh. In 1985 WHO convened a major conference in Nairobi on the rational use of drug. The major purpose of this conference was to improve drug use practices, proper utilization of drug in primary health care system & reduce health hazard, morbidity & mortality that is more important.

## 1.2. Definition of medicine

Medicine is the science or practice of the diagnosis, treatment, and prevention of disease. The word medicine is derived from the Latin *ars medicina*, meaning the art of healing. Medicine encompasses a variety of health care practices evolved to maintain and restore health by the prevention and treatment of illness.<sup>[1]</sup> Drug is regarded as “double edged sword” At one end, It can save a life when used rationally. At other hand, it can even take away a life when used irrationally.

## 1.3. Definition of drug dispensing

Dispense" means the interpretation of a prescription or order for a legend drug and, pursuant to that prescription or order, the proper selection, measuring, compounding, labeling, or packaging necessary to prepare that prescription or order for delivery.<sup>[2]</sup>

Dispensing is to ensure that an effective form of correct drug is delivered to the right patient, in the prescribed dosage & quantity with clear instruction & in a package that maintains the potency of drug.

## 1.4. Rational Use of Medicine

The concept of rational drug use is age old, as evident by the statement made by the Alexandrian physician, Herophilus, in 300 B.C that “Medicines are nothing in themselves, but are the very hands of god if employed with reason & prudence”.<sup>[3]</sup>

In simplest words rational use means “patient receiving appropriate drug to clinical needs, in adequate dose for the sufficient duration and at the lowest cost possible.”<sup>[3]</sup>

As per the WHO (1985), the definition of rational use of medicines – “Patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community.”<sup>[4]</sup>

## 1.5. Alternatively, RUDs can be defined as

‘Rule of Right’ as follows:

- Right medical indications (Clinical diagnosis): Specific will be identified by observation of signs & symptoms or clinical tests.
- Right selection of drugs: After identification of disease should be cost effective & select most appropriate medicine for the treatment. Wrong drug selection may cause threat for patient life.
- Right doses: Dose is most important fact for treatment. High doses may cause severe & low dose may cause ineffective so it should remember that Selection of doses should accurate & optimum.

- Right route of administration: Drug should administrate depending on patient's condition
- Right duration: Course of dose will be completed otherwise develop resistant or disease will not be completely cured.
- Right patients ( no contraindication)
- Right information (illness and drugs) <sup>[4]</sup>

## **1.6. Persons those involve with Rational Use of Drug:**

Prescribers

Dispensers

Patients

## **1.7. Advantages of Rational Use of Drug:**

- Misuse of medicine is reduced by using rational Use of medicine
- Rational Use of medicine cause reduces abuse of medicine.
- Reduce Overuse of medicine.
- Reduce medicine wastage & cost of patients by using appropriate medicine in right cases
- Rational Use of medicine reduce morbidity & mortality rate. <sup>[4]</sup>

## **1.8. Irrational Use of Drug:**

**On the other hand, IRUDs can be defined as “Rule of Wrong” as follows:**

- Wrong clinical diagnosis
- Wrong selection of drugs
- Wrong doses
- Wrong route of administration
- Wrong duration
- Wrong patients
- Wrong information and interpretation. <sup>[4]</sup>

## **1.9. Persons those involve with Irrational Use of Drug:**

### **1.9.1. Prescribers**

- Lack of confidence in making correct diagnosis or
- Uncertainty in diagnosis due to lack of inadequate diagnostic facilities e.g. lake of microscope, BP instrument, stethoscope, torch, etc.
- Lack of objective drug information
- Heavy patients load in work place (leads to less consultation time and thus, prescribing too many drugs i.e. polypharmacy)
- Failure to prescribe drugs as per standard treatment guide-lines ( STG). <sup>[4]</sup>

### **1.9.2. Dispensers**

- Incorrect interpretation of the prescription.
- Retrieval of wrong ingredients.
- Inadequate/ poor labeling.
- Unsanitary procedures.<sup>[4]</sup>
- Packaging:
  - ✓ Poor quality packaging materials.
  - ✓ Odd packaging size which may require repackaging.
  - ✓ Unappealing package.<sup>[4]</sup>

### 1.9.3. Patients

- Inadequate verbal instructions.
- Inadequate counseling to encourage adherence.
- Inadequate follow-up/support of patients.
- Treatment or instructions that do not consider the patient's beliefs, environment, or culture.<sup>[4]</sup>

## 1.10. Reasons for irrational use of drugs:

There are several reasons which may contribute to irrational use of drugs in our country:

1. **Lack of information:** Unlike many developed countries we don't have regular facilities, which provide us with up to date, unbiased information on the currently used drugs. The majority of our practitioners rely on medical representatives. There are differences between pharmaceutical concern & the drug regulatory authorities in the interpretation of the data related to indications & safety of drugs.<sup>[4]</sup>
2. **Faulty & inadequate training & education of medical graduates:** Lack of proper clinical training regarding writing a prescription during training period, dependency on diagnostic aid, rather than clinical diagnosis, is increasing day by day in doctors.<sup>[4]</sup>
3. **Poor communication between health professional & patient:** Medical practitioners & other health professional giving less time to the patient & not explaining some basic information about the use of drugs.<sup>[4]</sup>
4. **Lack of diagnostic facilities/Uncertainty of diagnosis:** Correct diagnosis is an important step toward rational drug therapy. Doctors posted in remote areas have to face a lot of difficulty in reaching to a precise diagnosis due to non availability of diagnostic facilities. This promotes poly-pharmacy.<sup>[4]</sup>
5. **Demand from the patient:** To satisfy the patient expectations and demand of quick relief, clinicians prescribe drugs for every single complaint. Also, there is a belief that "every ill has a pill" All these increase the tendency of polypharmacy.<sup>[4]</sup>
6. **Defective drug supply system & ineffective drug regulation:** Absence of well organized drug regulatory authority & presence of large numbers of drugs in the market leads to irrational use of drugs.<sup>[4]</sup>
7. **Promotional activities of pharmaceutical industries:** The lucrative promotional programmed of the various pharmaceutical industries influence the drug prescribing.

## 1.11. Impacts of irrational use of drugs:

As per WHO, irrational or non-rational use is the use of medicines in a way that is not compliant with rational use as defined above. It was reported that worldwide, more than 50% of all medicines are prescribed, dispensed, or sold inappropriately, while 50% of patients fail to take them correctly. Moreover, about one-third of the world's population lacks access to essential medicines. Common examples of irrational medicine use are:

**Overuse of drugs and injections:** occurs as a consequence of overprescribing as well as overconsumption. It concerns particularly the use and prescription of antibiotics, antidiarrhoeals, painkillers, injections and cough and cold preparations. Injections have long had a special connotation as particularly powerful and fast acting medicines.<sup>[4]</sup>

**Multi-drug use or polypharmacy:** The number of drugs per prescription is often more than needed, with an average of 2.4 up to ten drugs, while generally one or two drugs would have sufficed. Multi-drug use is also common among consumers who purchase their drugs (over the counter drugs).<sup>[4]</sup>

**Incorrect drug use:** involves the wrong drug for a specific condition (e.g. antibiotics or antidiarrhoeals for childhood diarrhoea), drugs of doubtful efficacy (e.g. antimotility agents for diarrhoea), or use of drugs in the wrong dosage (which is often the case with antibiotics, ORS and antimalarials). Incorrect drug use occurs in the sense of incorrect prescribing as well as inappropriate use by consumers.<sup>[4]</sup>

## 1.12. Some of the public health and economic consequences of irrational use of drugs are:

Adverse possibly lethal effects, e.g. due to antibiotic misuse or inappropriate use of drugs in self-medication.

Limited efficacy, e.g. in the case of under-therapeutic dosage of antibiotics, tuberculosis or leprosy drugs.

Antibiotic resistance due to widespread overuse of antibiotics, as well as their use in under-therapeutic dosage.

Drug dependence, e.g. due to daily use of painkillers and tranquilizers.

Risk of infection (due to improper use of injections): injection-related disorders are abscesses, polio, hepatitis and AIDS.

Waste of resources: Reduced availability of other vital drugs and increased cost.

Irrational drug use and its consequence- the antimicrobial misuse problem:

Some irrational fixed dose combinations available in the Indian Market:

The fourteenth WHO model list of essential medicines (March 2005) contains only 18 approved drug combinations, whereas in India, there are innumerable examples of irrational drug combinations, which are available and can be bought without necessarily giving a prescription.<sup>[4]</sup>

# **CHAPTER 2**

## **RIGHT SITE UPPER ABDOMINAL PAIN**



## 2.1. Right Site Upper Abdominal Pain

### 2.2. Cholecystitis:

A Greek word cholecyst means “gallbladder” & suffix means” inflammation” is referred Cholecystitis is inflammation of the gallbladder. Although most people with gallstones do not have symptoms & will not go on to develop cholecystitis, cholecystitis occurs most commonly due to blockage of the cystic duct with gallstones. <sup>[5][6]</sup>

This blockage causes a buildup of bile in & increased pressure within the gallbladder leading to right site upper abdominal pain. <sup>[6]</sup> Concentrated bile, pressure & sometimes bacterial infection irritate & damage the gallbladder wall, causing inflammation & swelling of the gallbladder. <sup>[5]</sup> Inflammation & swelling of the gallbladder can reduce normal blood flow to areas of the gallbladder, which can lead to cell death due to inadequate oxygen. <sup>[6]</sup>

### 2.3. Signs & Symptoms of Cholecystitis:

Most people with gallstone do not have symptoms. <sup>[5]</sup> When a gallstone becomes intermittently lodged in the cystic duct, they suffer from biliary colic. <sup>[5]</sup> Biliary colic is abdominal pain in the right upper quadrant or epigastrium that is usually episodic, occurs after eating greasy or fatty foods & leads to nausea or vomiting. <sup>[6]</sup> People who suffer from cholecystitis most commonly initially have symptoms of biliary colic before developing cholecystitis. The symptoms of cholecystitis are similar to biliary colic but the pain becomes more severe & constant. Nausea is common & vomiting occurs in 75% of people with cholecystitis. <sup>[7]</sup> In addition to abdominal pain & right shoulder pain can be present. <sup>[6]</sup>

On physical examination, fever is common. <sup>[7]</sup> A gallbladder with cholecystitis is almost always tender to touch. <sup>[6]</sup> Because of the inflammation, its size can be felt from the outside of the body in 25-50% of people with cholecystitis. <sup>[6]</sup> Pain with deep inspiration leading to termination of the breath while pressing on the right upper quadrant of the abdomen usually causes pain (Murphy's sign). Murphy's sign is sensitive, but not specific for cholecystitis. <sup>[8]</sup>

Jaundice may occur but is usually mild, and if severe, suggests another cause of symptoms such as choledocholithiasis. <sup>[7]</sup> Elderly patients and those with diabetes, chronic illness, or who are immunocompromised may have vague symptoms that may not include fever or localized tenderness. <sup>[9]</sup>

### 2.4. Causes of Cholecystitis:

Cholecystitis occurs when the gallbladder becomes inflamed. <sup>[6]</sup> Gallbladder inflammation is most commonly caused by gallstone but can also occur due to blockage from a tumor or scarring of the bile duct. <sup>[6][10]</sup> The greatest risk factors for cholecystitis is gallstones. <sup>[10]</sup> Risk factors for gallstones include female sex, increasing age, pregnancy, oral contraceptives, obesity, diabetes mellitus, ethnicity & rapid weight loss. <sup>[6]</sup>

## **2.5. Classification of Cholecystitis:**

### **2.5.1. Acute calculous cholecystitis**

Roughly 90% of cases of cholecystitis are caused by gallstones blocking the flow of bile in the biliary tree leading to inflammation of the gallbladder.<sup>[5][3]</sup> Blockage of bile flow leads to thickening of bile & bilestasis which lead to an enlarged, red & tense gallbladder.<sup>[5]</sup> The gallbladder is initially sterile but often becomes secondarily infected by bacteria, predominantly by E.coli, Klebsiella, Streptococcus & Clostridium species.<sup>[6]</sup> Inflammation can spread to the outer covering of the gallbladder leading to irritation of surrounding structures such as the diaphragm which leads to right shoulder pain.<sup>[6]</sup>

### **2.5.2. Acalculous cholecystitis**

In 5-10% of cases of cholecystitis, the gallbladder may become inflamed in the absence of a gallstone, known as acalculous cholecystitis.<sup>[6]</sup> Acalculous cholecystitis is more commonly seen in severely ill people such as those in intensive care units or in those who have recently undergone major surgery.<sup>[7]</sup>

### **2.5.3. Chronic cholecystitis**

Chronic cholecystitis occurs after repeated episode of acute cholecystitis & is almost always due to gallstones.<sup>[6]</sup> Chronic cholecystitis may be asymptomatic, may present as a more severe case of acute cholecystitis or may lead to a number of complications such as gangrene, perforation or fistula formation.<sup>[6][7]</sup>

### **2.5.4. Xanthogranulomatous cholecystitis**

(XGC) is a rare form of chronic cholecystitis which mimics gallbladder cancer although it is not cancerous.<sup>[11][12]</sup> It was first discovered and reported in the medical literature in 1976 by J.J. McCoy, Jr., and colleagues.<sup>[11][13]</sup>

## **2.6. Diagnosis**

The diagnosis of cholecystitis is suggested by the history (abdominal pain, nausea, vomiting, fever) and physical examinations in addition to laboratory and ultrasonographic testing.

## **2.7. Blood Test**

In someone suspected of having cholecystitis, blood tests are performed for markers of inflammation (e.g. complete blood count, C-reactive protein) as well as a bilirubin level in order to assess for bile duct blockage.<sup>[7]</sup> Complete blood count typically shows an increased white blood count (12,000-15000/mcL).<sup>[7]</sup> Bilirubin levels are often mildly elevated (1-4 mg/DL).<sup>[7]</sup> If bilirubin are more significantly elevated, alternate or additional diagnoses should be considered such as gallstone blocking the common bile duct.<sup>[5]</sup>

## 2.8. Alternative diagnoses:

Many other diagnoses can have similar symptoms as cholecystitis. Additionally the symptoms of chronic cholecystitis are commonly vague and can be mistaken for other diseases. These alternative diagnoses include but are not limited to:<sup>[7]</sup>

- Perforated peptic ulcer
- Acute pancreatitis
- Liver abscess
- Pneumonia
- Myocardial ischemia
- Hiatal hernia
- Biliary colic
- Choledocholithiasis
- Cholangitis
- Appendicitis
- Colitis
- Acute peptic ulcer exacerbation
- Amoebic liver abscess
- Acute intestinal obstruction
- Kidney stone
- Biliary ascariasis<sup>[14]</sup>

## 2.9. Complication

A number of complications may occur from cholecystitis if not detected early or properly treated. Signs of complications include high fever, shock and jaundice. Complications include the following:<sup>[6]</sup>

- Gangrene
- Gallbladder rupture
- Empyema
- Fistula formation and gallstone ileus
- Rokitansky-Aschoff sinuses

## 2.10. Management:

For most patients diagnosed with acute cholecystitis, the definitive treatment is surgical removal of the gallbladder, cholecystectomy. Until the late 1980s surgical removal was usually accomplished by a large incision in the upper right quadrant of the abdomen under the rib cage. Since the advent of laparoscopic surgery in the early 1990s, laparoscopic cholecystectomy has become the treatment of choice for acute

cholecystitis.<sup>[15]</sup> Laparoscopic cholecystectomy is performed using several small incisions located at various points across the abdomen. Several studies have demonstrated the superiority of laparoscopic cholecystectomy when compared to open cholecystectomy. Patient undergoing laparoscopic surgery report less incision pain postoperatively as well as having fewer long term complications and less disability following the surgery.<sup>[16][17]</sup> Additionally, laparoscopic surgery is associated with a lower rate of surgical site infection.<sup>[18]</sup>

During the days prior to laparoscopic surgery, studies showed that outcomes were better following early removal of the gallbladder, preferably within the first week.<sup>[19]</sup> Patients receiving early intervention had shorter hospital stays and lower complication rates. In the era of laparoscopic surgery, a similar approach is still advocated. In a 2006 Cochrane review, early laparoscopic cholecystectomy was compared to delayed treatment. The review consisted of 5 trials with 451 patients randomized to either early (223 patients) or delayed (228) surgical management.<sup>[20]</sup> There was no statistically significant difference in terms of negative outcomes including bile duct injury (OR 0.63, 95% CI 0.15 to 2.70) or conversion to open cholecystectomy (OR 0.84, 95% CI 0.53 to 1.34).<sup>[18]</sup> However, the early group was found to have shorter hospital stays.<sup>[20]</sup> For early cholecystectomy, the most common reason for conversion to open surgery is inflammation obscuring Calot's triangle. For delayed surgery, the most common reason was fibrotic adhesions.<sup>[20]</sup>

Supportive measures are usually instituted prior to surgery. These measures include fluid resuscitation & antibiotics targeting enteric organisms such as E.coli & Bacteroides. Antibiotic regimens usually consist of a broad spectrum antibiotic such as penicillin & cephalosporin (e.g. ceftriaxone) and an antibacterial with good coverage (fluroquinolone such as ciprofloxacin) and anaerobic bacteria coverage such as metronidazole. For penicillin allergic patients

In cases of severe inflammation, shock, or if the patient has higher risk for general anesthesia (required for cholecystectomy), the managing physician may elect to have an interventional radiologist insert a percutaneous drainage catheter into the gallbladder and treat the patient with antibiotics until the acute inflammation resolves.

A cholecystectomy may then be warranted if the patient's condition improves. Homeopathic approaches to treating cholecystitis have not been validated by evidence and should not be used in place of surgery.

# **CHAPTER 3**

## **FEVER**

### 3.1. Fever

Pyrexia is from the Greek pyr meaning fire. Febrile is from the Latin word febris, meaning fever. Fever is defined as a body increases temperature above  $>37.5$  or  $38.3$  °C than the normal range  $36.5$ – $37.5$  °.

Fever, also known as pyrexia and febrile response,<sup>[21]</sup> is defined as a temperature above the normal range due to an increase in the body's temperature set-point.<sup>[22][23]</sup> There is not a single agreed upon upper limit for normal temperature with sources using values between  $37.5$  and  $38.3$  °C ( $99.5$  and  $100.9$  °F).<sup>[21][24]</sup>

### 3.2. Causes of Fever:

A pyrogen is a substance that induces fever. These can be either internal (endogenous) or external (exogenous) to the body. The bacterial substance lipopolysaccharide (LPS), present in the cell wall of some bacteria, is an example of an exogenous pyrogen.

**3.2.1. Endogenous:** In essence, all endogenous pyrogens are cytokines, molecules that are a part of the immune system. They are produced by activated immune cells and cause the increase in the thermoregulatory set point in the hypothalamus. Major endogenous pyrogens are interleukin 1 ( $\alpha$  and  $\beta$ )<sup>[25]</sup> and interleukin 6 (IL-6). Minor endogenous pyrogens include interleukin-8, tumor necrosis factor- $\beta$ , macrophage inflammatory protein- $\alpha$  and macrophage inflammatory protein- $\beta$  as well as interferon- $\alpha$ , interferon- $\beta$ , and interferon- $\gamma$ .<sup>[25]</sup>

**3.2.2. Exogenous:** One model for the mechanism of fever caused by exogenous pyrogens includes LPS, which is a cell wall component of gram-negative bacteria. An immunological protein called lipopolysaccharide-binding protein (LBP) binds to LPS. The LBP–LPS complex then binds to the CD14 receptor of a nearby macrophage. This binding results in the synthesis and release of various endogenous cytokine factors, such as interleukin 1 (IL-1), interleukin 6 (IL-6), and the tumor necrosis factor- $\alpha$ . In other words, exogenous factors cause release of endogenous factors, which, in turn, activate the arachidonic acid pathway.

**3.2.3. PGE2 release:** PGE2 release comes from the arachidonic acid pathway. This pathway (as it relates to fever), is mediated by the enzymes phospholipase A2 (PLA2), cyclooxygenase-2 (COX-2), and prostaglandin E2 synthase. These enzymes ultimately mediate the synthesis and release of PGE2.

PGE2 is the ultimate mediator of the febrile response. PGE2 acts on neurons in the preoptic area (POA) through the prostaglandin E receptor 3 (EP3). EP3-expressing neurons in the POA innervate the dorsomedial hypothalamus (DMH), the rostral raphe pallidus nucleus in the medulla oblongata (rRPa), and the para ventricular nucleus (PVN) of the hypothalamus. Fever signals sent to the DMH and rRPa lead to stimulation of the sympathetic output system, which evokes non-shivering thermogenesis to produce body heat. It is presumed that the innervation

from the POA to the PVN mediates the neuroendocrine effects of fever through the pathway involving pituitary gland and various endocrine organs.

This includes viral, bacterial and parasitic infections such as the common cold, urinary tract infections, meningitis, malaria and appendicitis among others. Non infectious causes include vasculitis, deep vein thrombosis, side effects of medication, and cancer among others.

### **3.4. Types of Fever:**

**3.4.1. Continuous fever:** Temperature remains above normal throughout the day and does not fluctuate more than 1 °C in 24 hours, e.g. lobar pneumonia, typhoid, urinary tract infection, brucellosis, or typhs. Typhoid fever may show a specific fever pattern (Wunderlich curve of typhoid fever), with a slow stepwise increase and a high plateau. (Drops due to fever-reducing drugs are excluded.)

**3.4.2. Intermittent fever:** The temperature elevation is present only for a certain period, later cycling back to normal, e.g. malaria, kala-azar, pyaemia, or septicemia.<sup>[26]</sup> Following are its types

Quotidian fever, with a periodicity of 24 hours, typical of Plasmodium falciparum or Plasmodium knowlesi malaria

Tertian fever (48-hour periodicity), typical of Plasmodium vivax or Plasmodium ovale malaria

Quartan fever (72-hour periodicity), typical of Plasmodium malariae malaria.

**3.4.3. Remittent fever:** Temperature remains above normal throughout the day and fluctuates more than 1 °C in 24 hours, e.g., infective endocarditis.

**3.4.4. Pel-Ebstein fever:** A specific kind of fever associated with Hodgkin's lymphoma, being high for one week and low for the next week and so on.<sup>[27]</sup>

**3.4.5. Neutropenic fever:** also called febrile neutropenia, is a fever in the absence of normal immune system function. Because of the lack of infection-fighting neutrophils, a bacterial infection can spread rapidly; this fever is, therefore, usually considered to require urgent medical attention.

### **3.5. Signs and symptoms of Fever:**

A fever is usually accompanied by sickness behavior, which consists of lethargy, depression, anorexia, sleepiness, hyperalgesia, and the inability to concentrate.<sup>[28][29][30]</sup>

### **3.6. Diagnosis:**

- Clinical
- Culture of blood, stool or urine
- Serological examination, such as the Widal test may be used as an adjunct to diagnosis in the proper clinical setup. The Widal test is, however, characterized by false positive results.

### 3.7. Management

Fever should not necessarily be treated.<sup>[31]</sup> Most people recover without specific medical attention.<sup>[32]</sup> Although it is unpleasant, fever rarely rises to a dangerous level even if untreated. Damage to the brain generally does not occur until temperatures reach 42 °C (107.6 °F), and it is rare for an untreated fever to exceed 40.6 °C (105 °F).<sup>[31]</sup>

### 3.8. Conservative measures:

Some limited evidence supports sponging or bathing feverish children with tepid water.<sup>[33]</sup> The use of a fan or air conditioning may somewhat reduce the temperature and increase comfort.<sup>[30]</sup> If the temperature reaches the extremely high level of hyperpyrexia, aggressive cooling is required. In general, people are advised to keep adequately hydrated.<sup>[34]</sup> Whether increased fluid intake improves symptoms or shortens respiratory illnesses such as the common cold is not known.<sup>[35]</sup>

### 3.9. Medications

Medications that lower fevers are called antipyretics. The antipyretic ibuprofen is effective in reducing fevers in children.<sup>[35]</sup> It is more effective than acetaminophen (paracetamol) in children. Ibuprofen and acetaminophen may be safely used together in children with fevers.<sup>[37][38]</sup> The efficacy of acetaminophen by itself in children with fevers has been questioned.<sup>[39]</sup> Ibuprofen is also superior to aspirin in children with fevers.<sup>[40]</sup> Additionally, aspirin is not recommended in children and young adults (those under the age of 16 or 19 depending on the country) due to the risk of Reye's syndrome.<sup>[41]</sup>

Using both paracetamol and ibuprofen at the same time or alternating between the two is more effective at decreasing fever than using only paracetamol or ibuprofen.<sup>[42]</sup> It is not clear if it increases child comfort.<sup>[42]</sup>



# **CHAPTER 4**

# **DIARRHOEA**

## 4.1. Diarrhoea

Diarrhea is defined by the World Health Organization as having three or more loose or liquid stools per day, or as having more stools than is normal for that person.<sup>[43]</sup>

Acute diarrhea is defined as an abnormally frequent discharge of semisolid or fluid fecal matter from the bowel, lasting less than 14 days, by World Gastroenterology Organization.<sup>[44]</sup>

About 1.7 to 5 billion cases of diarrhea occur per year.<sup>[45][46]</sup> It is most common in developing countries, where young children get diarrhea on average three times a year.<sup>[45]</sup> Total deaths from diarrhea are estimated at 1.26 million in 2013 – down from 2.58 million in 1990.<sup>[47]</sup> In 2012, it is the second most common cause of deaths in children younger than five (0.76 million or 11%).<sup>[45][48]</sup> Frequent episodes of diarrhea are also a common cause of malnutrition and the most common cause in those younger than five years of age.<sup>[45]</sup> Other long term problems that can result include stunted growth and poor intellectual development.<sup>[48]</sup>

## 4.2. There are three clinical types of diarrhoea:

4.2.1. Acute watery diarrhea: lasts several hours or days, and includes cholera.<sup>[45]</sup>

4.2.2. Acute bloody diarrhoea: also called dysentery.<sup>[45]</sup>

4.2.3. Persistent diarrhoea: lasts 14 days or longer.<sup>[45]</sup>

**4.3. Investigation:** FBC • Blood film for malaria parasite • Stool routine examination • Stool for culture and sensitivity • Blood urea and creatinine<sup>[49]</sup>

## 4.4. Dehydration

The most severe threat posed by diarrhoea is dehydration. During a diarrhoeal episode, water and electrolytes (sodium, chloride, potassium and bicarbonate) are lost through liquid stools, vomit, sweat, urine and breathing. Dehydration occurs when these losses are not replaced.<sup>[45]</sup>

## 4.5. The degree of dehydration is rated on a scale of three:

**4.5.1. Early dehydration:** no signs or symptoms.<sup>[45]</sup>

**4.5.2. Moderate dehydration:** Thirst, restless or irritable behavior, decreased skin elasticity, sunken eyes.<sup>[45]</sup>

**4.5.3. Severe dehydration:** shock, with diminished consciousness, lack of urine output, cool, moist extremities, a rapid and feeble pulse, low or undetectable blood pressure, and pale skin.<sup>[45]</sup>

Death can follow severe dehydration if body fluids and electrolytes are not replenished, either through the use of oral rehydration salts (ORS) solution, or through an intravenous drip.<sup>[45]</sup>

## 4.6. Causes of Diarrhoea:

**4.6.1. Infection:** Diarrhoea is a symptom of infections caused by a host of bacterial, viral and parasitic organisms, most of which are spread by faeces-contaminated water. Infection is more common when there is a shortage of adequate sanitation and hygiene and safe water for drinking, cooking and cleaning. Rotavirus and Escherichia coli are the two most common etiological agents of diarrhoea in developing countries.<sup>[45]</sup>

**4.6.2. Malnutrition:** Children who die from diarrhoea often suffer from underlying malnutrition, which makes them more vulnerable to diarrhoea. Each diarrhoeal episode, in turn, makes their malnutrition even worse. Diarrhoea is a leading cause of malnutrition in children under five years old.<sup>[45]</sup>

**4.6.3. Source:** Water contaminated with human faeces, for example, from sewage, septic tanks and latrines, is of particular concern. Animal faeces also contain microorganisms that can cause diarrhoea.<sup>[45]</sup>

**4.6.4. Other causes:** Diarrhoeal disease can also spread from person-to-person, aggravated by poor personal hygiene. Food is another major cause of diarrhoea when it is prepared or stored in unhygienic conditions. Water can contaminate food during irrigation. Fish and seafood from polluted water may also contribute to the disease.<sup>[45]</sup>

## 4.7. Prevention and treatment:

### 4.7.1. Key measures to prevent diarrhoea include:

Access to safe drinking water. Use of improve sanitation. Hand washing with soap. Exclusive breast feeding for the first six months of life. Good personal and food hygiene. Health education about how infections spread and rotavirus vaccination.<sup>[45]</sup>

### 4.7.2. Key measures to treat diarrhoea include the following:

**4.7.2.1. Rehydration:** with oral rehydration salts (ORS) solution. ORS is a mixture of clean water, salt and sugar. It costs a few cents per treatment. ORS is absorbed in the small intestine and replaces the water and electrolytes lost in the faeces.<sup>[45]</sup>

**4.7.2.2. Zinc supplements:** zinc supplements reduce the duration of a diarrhoea episode by 25% and are associated with a 30% reduction in stool volume.<sup>[45]</sup>

**4.7.2.3. Nutrient-rich foods:** the vicious circle of malnutrition and diarrhoea can be broken by continuing to give nutrient-rich foods – including breast milk – during an episode, and by giving a nutritious diet – including exclusive breastfeeding for the first six months of life – to children when they are well.<sup>[45]</sup>

# **CHAPTER 5**

## **URINARY TRACT INFECTION**

## 5.1. Definition of UTIs

A urinary tract infection (UTI) (also known as acute cystitis or bladder infection) is an infection that affects part of the urinary tract. When it affects the lower urinary tract it is known as a simple cystitis (a bladder infection) and when it affects the upper urinary tract it is known as pyelonephritis (a kidney infection).<sup>[50]</sup>

Urinary tract infections occur more commonly in women than men, with half of women having at least one infection at some point in their lives. Recurrences are common. Risk factors include female anatomy, sexual intercourse and family history.

In women, urinary tract infections are the most common form of bacterial infection with 10% developing urinary tract infections yearly.

## 5.2. Signs and symptoms of UTIs

Urine may contain pus (a condition known as pyuria) as seen from a person with sepsis due to a urinary tract infection.

Lower urinary tract infection is also referred to as a bladder infection. The most common symptoms are burning with urination and having to urinate frequently (or an urge to urinate) in the absence of vaginal discharge and significant pain.<sup>[51]</sup> These symptoms may vary from mild to severe<sup>[52]</sup> and in healthy women last an average of six days.<sup>[53]</sup> Some pain above the pubic bone or in the lower back may be present.

People experiencing an upper urinary tract infection, or pyelonephritis, may experience flank pain, fever, or nausea and vomiting in addition to the classic symptoms of a lower urinary tract infection.<sup>[52]</sup> Rarely the urine may appear bloody<sup>[54]</sup> or contain visible pus in the urine.<sup>[55]</sup>

**5.2.1. Children:** In young children, the only symptom of a urinary tract infection (UTI) may be a fever. Because of the lack of more obvious symptoms, when females under the age of two or uncircumcised males less than a year exhibit a fever.<sup>[56]</sup>

**5.2.2. Elderly:** Urinary tract symptoms are frequently lacking in the elderly.<sup>[57]</sup> The presentations may be vague with incontinence, a change in mental status, or fatigue as the only symptoms,<sup>[52]</sup> while some present to a health care provider with sepsis, an infection of the blood, as the first symptoms.<sup>[54]</sup>

### 5.3. Causes of UTIs

E. coli is the cause of 80–85% of community-acquired urinary tract infections, with Staphylococcus saprophyticus being the cause in 5–10%.<sup>[51]</sup> Rarely they may be due to viral or fungal infections.<sup>[58]</sup> Healthcare-associated urinary tract infections (mostly related to urinary catheterization) involve a much broader range of pathogens including: E. coli (27%), Klebsiella (11%), Pseudomonas (11%), the fungal pathogen Candida albicans (9%), and Enterococcus (7%) among others.<sup>[52][59][60]</sup> Urinary tract infections due to Staphylococcus aureus typically occur secondary to blood-borne infections.<sup>[52]</sup> Chlamydia trachomatis and Mycoplasma genitalium can infect the urethra but not the bladder.<sup>[61]</sup> These infections are usually classified as a urethritis rather than urinary tract infection.

**5.3.1. Sex:** In young sexually active women, sexual activity is the cause of 75–90% of bladder infections, with the risk of infection related to the frequency of sex.<sup>[51]</sup> The term "honeymoon cystitis" has been applied to this phenomenon of frequent UTIs during early marriage. In post-menopausal women, sexual activity does not affect the risk of developing a UTI. Spermicide use, independent of sexual frequency, increases the risk of UTIs.<sup>[51]</sup> Women are more prone to UTIs than men because, in females, the urethra is much shorter and closer to the anus.<sup>[62]</sup>

**5.3.2. Chronic prostatitis:** may cause recurrent urinary tract infections in males.<sup>[63]</sup> Risk of infections increases as males age.<sup>[63]</sup> While bacteria is commonly present in the urine of older males this does not appear to affect the risk of urinary tract infections.<sup>[63]</sup>

**5.3.3. Urinary catheters:** Urinary catheterization increases the risk for urinary tract infections. The risk of bacteriuria (bacteria in the urine) is between three to six percent per day and prophylactic antibiotics are not effective in decreasing symptomatic infections.<sup>[62]</sup>

Male scuba divers utilizing condom catheters or the female divers utilizing external catching device for their dry suits are also susceptible to urinary tract infections.<sup>[64]</sup>

### 5.4. Pathogenesis

The bacteria that cause urinary tract infections typically enter the bladder via the urethra. However, infection may also occur via the blood or lymph. It is believed that the bacteria are usually transmitted to the urethra from the bowel, with females at greater risk due to their anatomy. After gaining entry to the bladder, E. Coli are able to attach to the bladder wall and form a biofilm that resists the body's immune response.<sup>[54]</sup>

## 5.5. Diagnosis

Multiple bacilli (rod-shaped bacteria, here shown as black and bean-shaped) shown between white blood cells in urinary microscopy. These changes are indicative of a urinary tract infection.

In straightforward cases, a diagnosis may be made and treatment given based on symptoms alone without further laboratory confirmation. In complicated or questionable cases, it may be useful to confirm the diagnosis via urinalysis, looking for the presence of urinary nitrites, white blood cells (leukocytes), or leukocyte esterase. Another test, urine microscopy, looks for the presence of red blood cells, white blood cells, or bacteria. Urine culture is deemed positive if it shows a bacterial colony count of greater than or equal to 10<sup>3</sup> colony-forming units per mL of a typical urinary tract organism. Antibiotic sensitivity can also be tested with these cultures, making them useful in the selection of antibiotic treatment. However, women with negative cultures may still improve with antibiotic treatment.<sup>[51]</sup> As symptoms can be vague and without reliable tests for urinary tract infections, diagnosis can be difficult in the elderly.<sup>[57]</sup>

## 5.6. Prevention

A number of measures have not been confirmed to affect UTI frequency including: urinating immediately after intercourse, the type of underwear used, personal hygiene methods used after urinating or defecating, or whether a person typically bathes or showers.<sup>[51]</sup> There is similarly a lack of evidence surrounding the effect of holding one's urine, tampon use, and douching.<sup>[62]</sup> In those with frequent urinary tract infections who use spermicide or a diaphragm as a method of contraception, they are advised to use alternative methods.<sup>[54]</sup> In those with benign prostatic hyperplasia urinating in a sitting position appears to improve bladder emptying which might decrease urinary tract infections in this group.<sup>[65]</sup>

Using urinary catheters as little and as short of time as possible and appropriate care of the catheter when used prevents infections.<sup>[66]</sup> They should be inserted using sterile technique in hospital however non-sterile technique may be appropriate in those who self catheterize.<sup>[23]</sup> The urinary catheter set up should also be kept sealed.<sup>[67]</sup> Evidence does not support an important decreased in risk when silver-alloy catheters are used.<sup>[68]</sup>

# **CHAPTER 6**

# **METHODOLOGY**



## 6.1. Methodology

We were randomly collected data of 435 dispensaries from January to May 2015. We have gone in 12 thanas of six districts of Bangladesh. Among of 12 thana, six thana in Dhaka district those are Vatara, Badda, Gulshan, Rampura, Khilkhet & Dakkhin khan. one thana in Rangpur is Mithapukur, one thana in Naogan district, one thana in Sirajgang district & three thanas in Bogra those are Dupchachia, Kahalu & Adamdighi. we were collected data by meeting individually with retailers of various pharmacies. we were talked with them & questioned about four selected diseases which are upper tight site abdominal pain, fever, diarrhea & urinary tract infection directly. Our question was about severe pain, severe diarrhea, fever & urinary tract infection & their possible causes & symptoms. We asked about their treatment by prescribing drug. We also asked them about their age, training & educational qualification. Most of retailers of pharmacies don't know exact causes of diseases & their signs & symptoms. Most of them give wrong information about diseases & their causes. Some retailers of pharmacy don't want to give right information about drugs those are prescribed for patients although they prescribe those types of drugs. After collection of data all data we have analyzed in SPSS 13.0 version. Descriptive Statistics were used to ascertain patterns of distribution of all data & used excel to analyze data in graphs to found out percentage, use of various types of antibiotics by retailers, prescribe of drugs against sign & symptoms of diseases, their knowledge about actual causes of diseases & prescribe of drug by retailers is rational nor irrational, number of polypharmacy, percentage of combined drugs prescribe at a time against diseases for the treatment & educational background of retailers.

**6.2. Study design:** We have collected data by questionnaires process.

**6.3. Study period:** We were randomly collected data of 435 dispensaries from January to May 2015.

# **CHAPTER 7**

## **RESULT & DISCUSSION**

## Result & Discussion

### 7.1. Prescribe of drugs for the treatment of diseases by drug retailers of Bangladesh

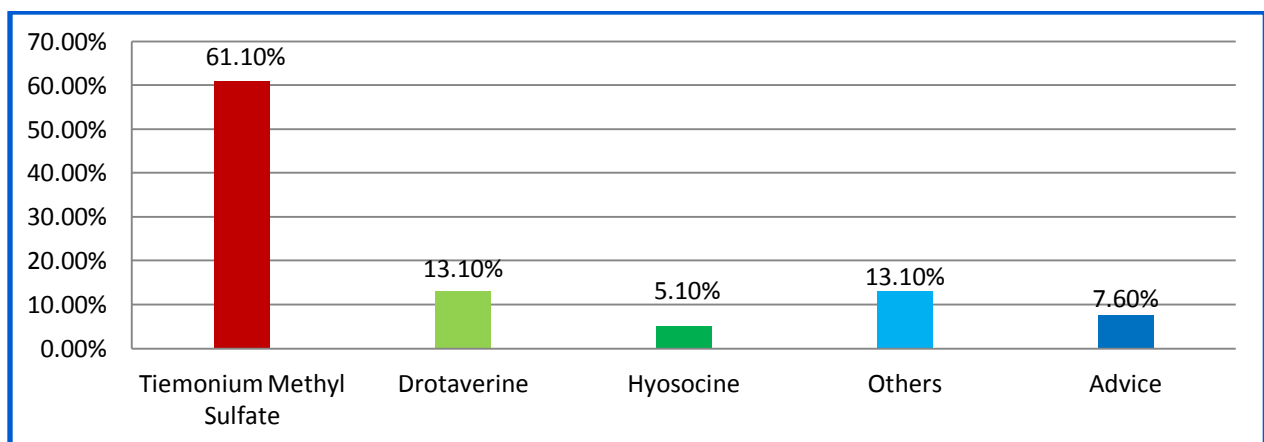
#### 7.1.1. Treatment of upper site abdominal pain

In case treatment of upper site abdominal pain following drugs are prescribed by retailers of drug dispensaries. In the table contains frequency & percentage of drug use in the treatment of upper site abdominal pain that shown bellow.

**Table 1** Prescribed drugs for treatment of upper site abdominal pain

Drugs	Frequency	Percent
Tiemonium Methyl Sulfate	266	61.1
Drotaverine	57	13.1
Hyosocine	22	5.1
Others	57	13.1
Referred	33	7.6
Total	435	100

Out of 435, most prescribe drugs for the treatment of upper site abdominal pain were Tiemonium methyl sulfate is 61.1%, Drotaverine 13.1%,Hyosocine 5.1%,Others 13.1% & only 7.6% were referred to doctors.



**Fig 1** Prescribed drugs for treatment of upper site abdominal pain

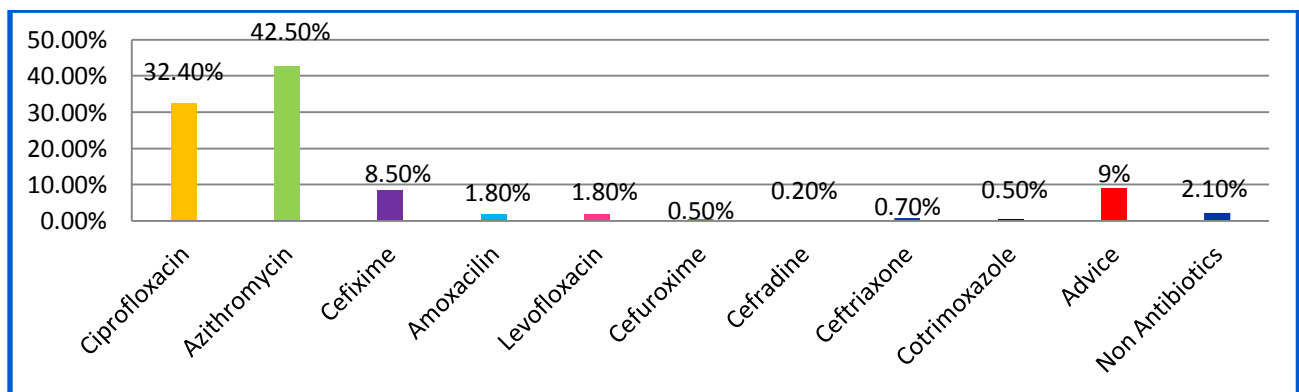
### 7.1.2. Prescribe of antibiotics for the treatment of fever

Antibiotics those are used by retailers of dispensary for the treatment of fever without any prescription that describe in the following table 2 through frequency & percentage.

**Table 2** Antibiotics category for the treatment of Fever

Antibiotics	Frequency	Percent
Ciprofloxacin	141	32.4
Azithromycin	185	42.5
Cefixime	37	8.5
Amoxacilin	8	1.8
Levofloxacin	8	1.8
Cefuroxime	2	.5
Cefradine	1	.2
Ceftriaxone	3	.7
Cotrimoxazole	2	.5
Advice	39	9.0
Non Antibiotics	9	2.1
Total	435	100.0

In the treatment of fever most of retailers prescribe Ciprofloxacin 141(32.4%) but it has noticed that they prescribe Azithromycin 185(42.5%) that is 10.1% more than Ciprofloxacin & also prescribe Cefixime 37(8.5%), Amoxacilin 8(1.8%), Levofloxacin 8(1.8%), Cefuroxime 2(.5%), Cefradine 1(.2%), Ceftriaxone 3(.7%), Cotrimoxazole 2(.5%) for the treatment of fever, 2.1( 9.0%) Advice to patient for referred to doctor & only 2.1% prescribe Non Antibiotics as paracetamol total out of 435(100%)



**Fig 2** Antibiotics category for the treatment of Fever

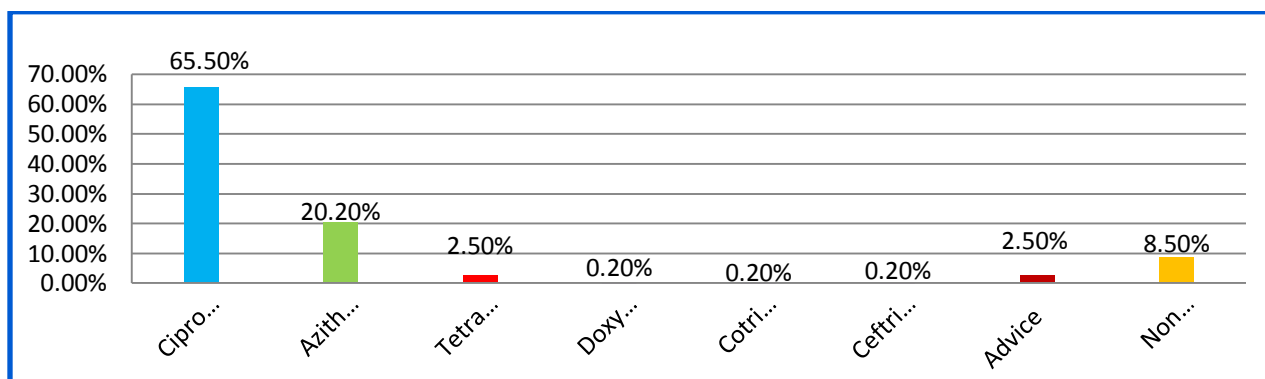
### 7.1.3. Use of antibiotics in the treatment of diarrhea

Most retailers of dispensary prescribed following antibiotics for the treatment of diarrhea that shown bellows in the table 3.

**Table 3** Antibiotics category for the treatment of Diarrhoea

Antibiotics	Frequency	Percent
Ciprofloxacin	285	65.5
Azithromycin	88	20.2
Tetracycline	11	2.5
Doxycycline	1	.2
Cotrimoxazole	1	.2
Ceftriaxone	1	.2
Advice	11	2.5
Non Antibiotics	37	8.5
Total	435	100.0

Most prescribed drug in the treatment of diarrhea is ciprofloxacin 285( 65.5%) & 88( 20.2%) azithromycin out of 435(100%) & minor amount others antibiotics such as Tetracycline 2.5(2.5%), Doxycycline 1(.2%), Cotrimoxazole 1(.2%), Ceftriaxone 1(.2%) were prescribed for the treatment of diarrhea. Only 11(2.5%) advice to patients go to hospital to take treatment & 37(8.5%) prescribed metronidazole or loparamide without antibiotics.



**Fig 3** Antibiotics category for the treatment of Diarrhoea

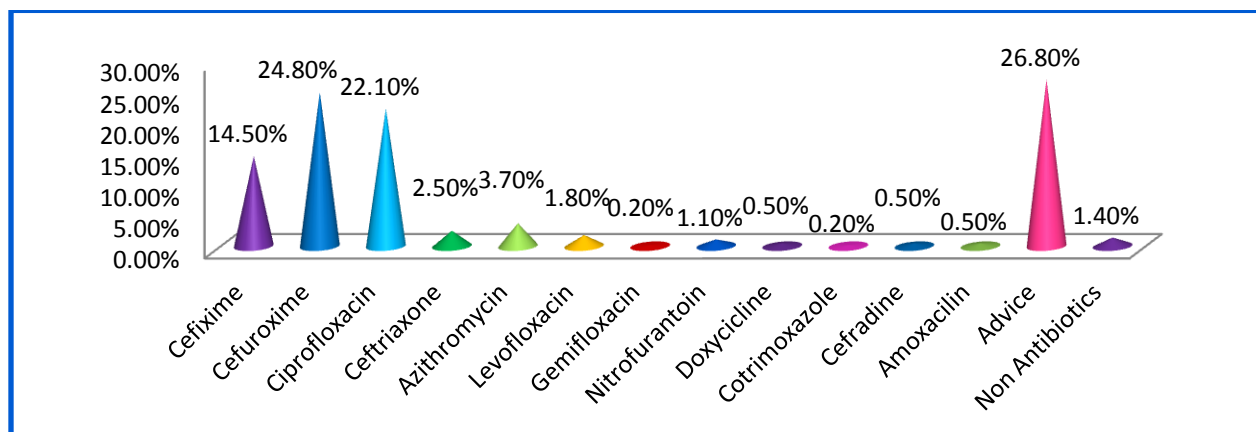
### 7.1.4. Use of antibiotics for the treatment of UTIs

UTIs are a serious disease. Antibiotics should not use for the treatment of UTIs without identification of specific bacteria but most retailers prescribed following drugs without prescription that shown in the table 4.

**Table 4** Antibiotics category for the treatment of UTIs

Antibiotics	Frequency	Percent
Cefixime	63	14.5
Cefuroxime	180	24.8
Ciprofloxacin	96	22.1
Ceftriaxone	11	2.5
Azithromycin	16	3.7
Levofloxacin	8	1.8
Gemifloxacin	1	.2
Nitrofurantoin	5	1.1
Doxycycline	2	.5
Cotrimoxazole	1	.2
Cefradine	2	.5
Amoxicillin	2	.5
Advice	114	26.8
Non Antibiotics	6	1.4
Total	435	100.0

For the treatment of UTIs 63(14.5%) prescribe Cefixime, 180(24.8%)Cefuroxime, 96( 22.1 %) Ciprofloxacin, 2.5(2.5%)Ceftriaxone, 16(3.7%)Azithromycin, 8(1.8%)Levofloxacin, 1(.2%) Gemifloxacin, 5(1.1%) Nitrofurantoin, 2(.5%)Doxycycline, 1(.2%)Cotrimoxazole, 2(.5%)Cefradine & 2(.5%) Amoxicillin out of 435(100%). Among out of 435(100%), 114(26.8%) referred to doctors & only 6(1.4%) given treatment without antibiotics.



**Fig 4** Antibiotics category for the treatment of UTIs

## 7.2. Causes of diseases that found out by drug retailers of Bangladesh

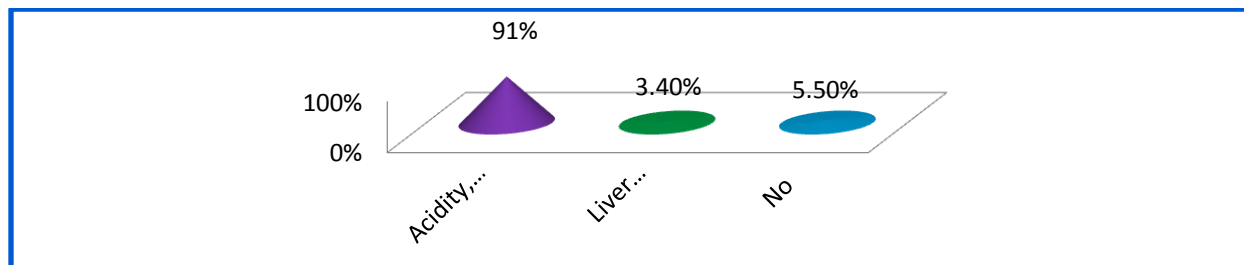
### 7.2.1 Causes of upper site abdominal pain

Most of the retailers of dispensary said upper site abdominal pain may occurred by following causes that shown in bellow by table 5.

**Table 5** Causes of Upper Site Abdominal Pain

Causes	Frequency	Percent
Acidity, Food Poisoning, Water, Appedicitis	396	91.0
Liver Infection	15	3.4
No	24	5.5
Total	435	100.0

Among 435(100%), 396(91%) think that causes of Upper site abdominal pain are Acidity. Only 15(3.4%) think that Upper Site Abdominal Pain occurred by Liver Infection & 24(5.5 %) don't know about causes of Upper Site Abdominal Pain.



**Fig 5** Causes of Upper Site Abdominal Pain

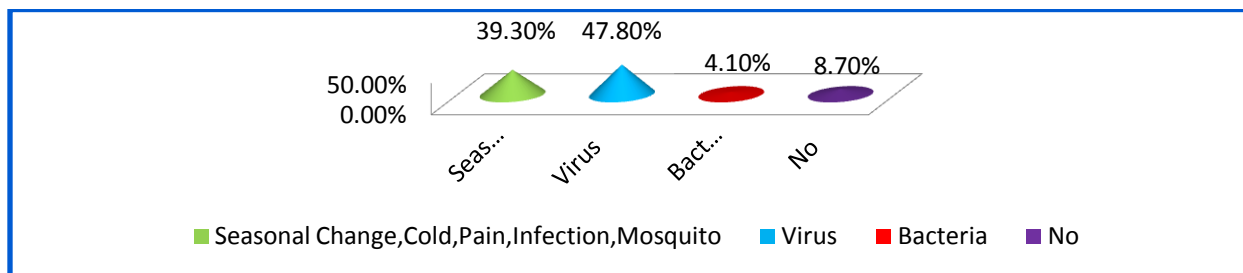
**7.2.2. Causes of Fever**

During collection of data it has noticed that fever may occurred by following causes that given in table 6 through frequency & percentage.

**Table 6** Causes of Fever

Causes	Frequency	Percent
Seasonal Change,Cold,Pain, Infection,Mosquito	171	39.3
Virus	208	47.8
Bacteria	18	4.1
No	38	8.7
Total	435	100.0

Among 435(100%), 171(39.3%) has said fever may occurred by seasonal change, Cold, Pain, infection, mosquito & 208(47.8%) said causes of fever is virus. Only 18(4.1%) think that causes of fever is bacteria & 38(8.7%) don't know about causes of fever.



**Fig 6** Causes of Fever



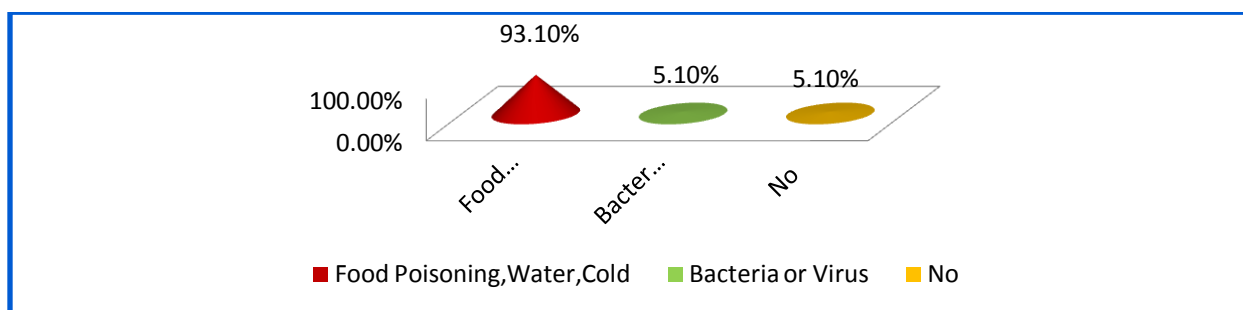
### 7.2.3. Causes of Diarrhoea

Diarrhoea is a common disease of Bangladesh that spreaded by various causes. Most retailers of dispensary said that diarrhea may occurred through by following causes that shown in table 7.

**Table 7** Causes of Diarrhoea

Causes	Frequency	Percent
Food Poisoning, Water,Cold	405	93.1
Bacteria or Virus	22	5.1
No	8	1.8
Total	435	100.0

Among 435(100%), 405(93.1%) said causes of diarrhea are food poisoning, water, cold & 22(5.1 %) said diarrhoea may occurred by bacteria or Virus & 8(1.8%) don't know about causes of diarrhea.



**Fig 7** Causes of Diarrhoea

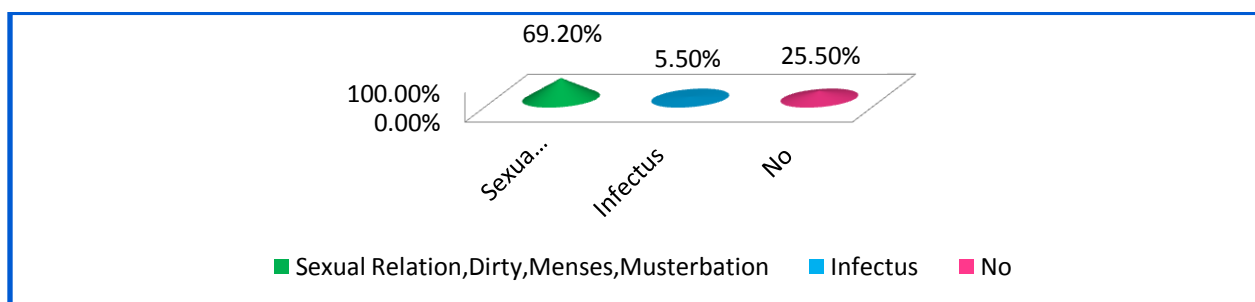
**7.2.4. Causes of UTIs**

Most of the retailers of dispensary think that UTIs are speared by following cause that shown in table 8 through frequency & percentage.

**Table 8** Causes of UTIs

Causes	Frequency	Percent
Sexual Relation, Dirty, Menses,Musterbation	301	69.2
Infectus	24	5.5
No	110	25.5
Total	435	100.0

Among 435,301(69.2%) assume that causes of UTIs are sexual relation, dirty, menses, masturbation & 24(5.5%) said UTIs occurred through bacteria or virus & 25.5% don't causes of UTIs.



**Fig 8** Causes of UTIs

### 7.3. Percentage of non Polypharmacy & Poly Pharmacy by drug retailers of Bangladesh

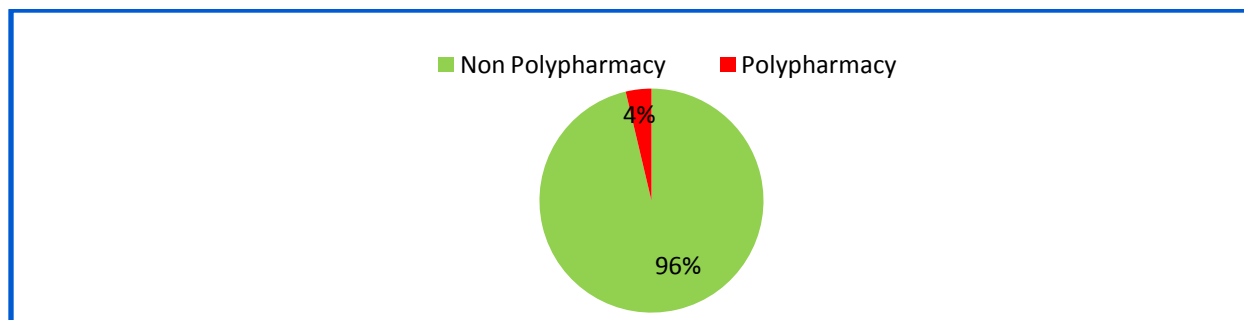
#### 7.3.1. Non polypharmacy & poly pharmacy of upper Site abdominal pain

Number Poly Pharmacy for treatment of upper site abdominal Pain by retailers of dispensary shown in the table 9.

**Table 9** Non Polypharmacy & Polypharmacy of upper site abdominal Pain

	Frequency	Percent
Non Polypharmacy	419	96.3
Polypharmacy	16	3.7
Total	435	100.0

Among 435(100%), it has noticed that 16(3.7%) is poly pharmacy & they prescribe 4-5 drugs simultaneously for the treatment of upper Site abdominal pain.



**Fig 9** Non Polypharmacy & Polypharmacy of upper site abdominal pain

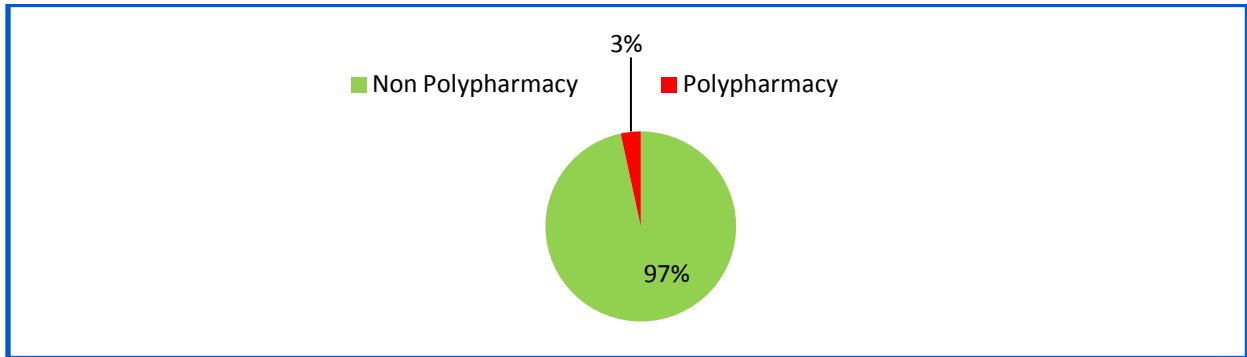
**7.3.2. Non Polypharmacy & Poly Pharmacy of Fever**

Poly Pharmacy by retailers in the treatment of fever that shown bellow in the table 10 through frequency & percentage.

**Table 10** Non Polypharmacy & Poly Pharmacy of Fever

	Frequency	Percent
Non Polypharmacy	420	96.6
Polypharmacy	15	3.4
Total	435	100.0

Among 435(100%), it has noticed that 15(3.4%) is poly pharmacy & they prescribe 4-5 drugs simultaneously for the treatment of fever.



**Fig 10** Non Polypharmacy & Poly Pharmacy of Fever

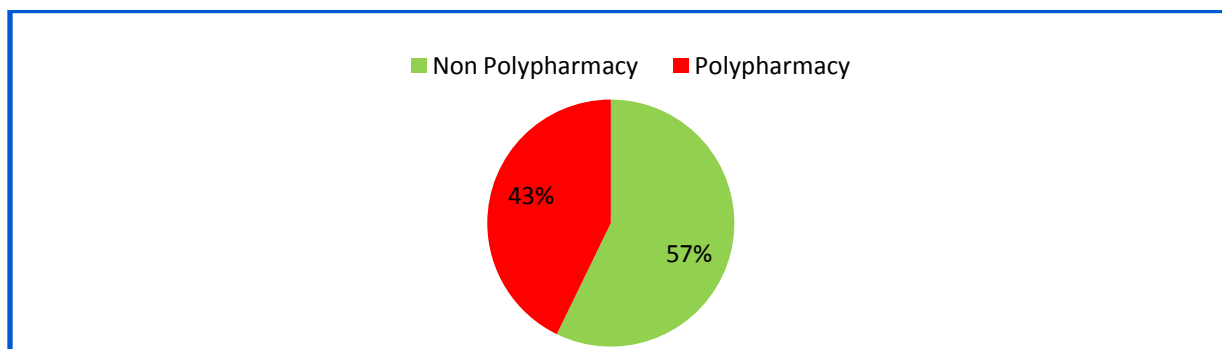
### 7.3.3. Non Polypharmacy & Poly Pharmacy of Diarrhoea

Number of Poly Pharmacy by retailers in the treatment of diarrhoea that shown bellow in the table 11 through frequency & percentage.

**Table 11** Non Polypharmacy & Poly Pharmacy of Diarrhoea

	Frequency	Percent
Non Polypharmacy	249	57.2
Polypharmacy	186	42.8
Total	435	100.0

Out of 435(100%), it has noticed that 186(42.8%) is poly pharmacy & they prescribe 4-5 drugs simultaneously for the treatment of diarrhea.



**Fig 11** Non Polypharmacy & Poly Pharmacy of Diarrhoea

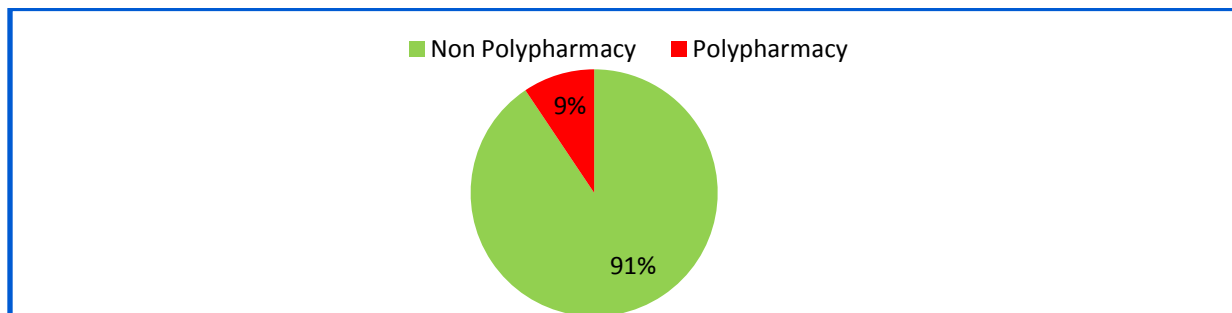
**7.3.4. Non Polypharmacy & Poly Pharmacy UTIs**

Poly Pharmacy by retailers in the treatment of UTIs that shown bellow in the table 12 through frequency & percentage.

**Table 12** Non Polypharmacy & Poly Pharmacy UTIs

	Frequency	Percent
Non Polypharmacy	394	90.6
Polypharmacy	41	9.4
Total	435	100.0

Among 435(100%),it has noticed that 41(9.4%) is poly pharmacy & they prescribe 4-5 drugs simultaneously for the treatment of UTIs.



**Fig 12** Non Polypharmacy & Poly Pharmacy UTIs

## 7.4. Selection of drugs against causes of diseases by drug retailers of Bangladesh

### 7.4.1. Drug selection against causes of pain

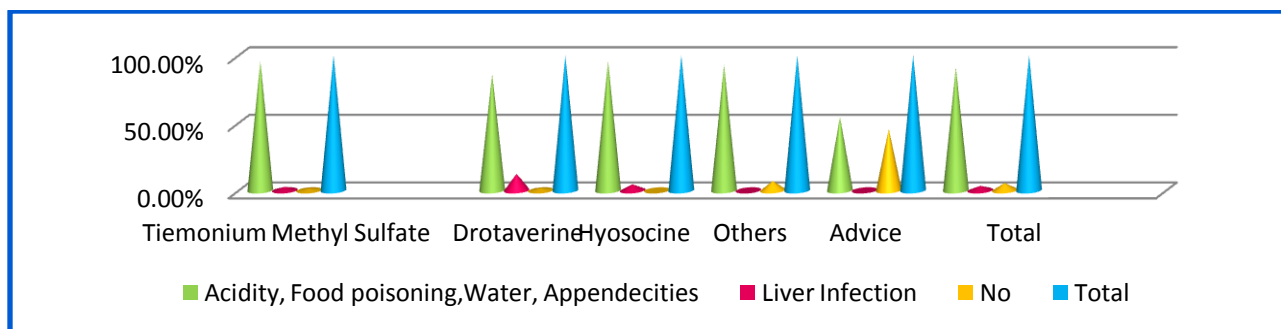
Selection of drugs by retailers for the treatment against cause of upper abdominal pain. Most retailers selected following drugs for the treatment of upper abdominal pain shown in table 14.

**Table 13** Treatment against causes of upper abdominal pain

Drug	Acidity, Food poisoning, Appendicitis	Liver Infection	No	Total
Tiemonium Methyl Sulfate	255(95.9%)	7(2.6%)	4(1.5%)	266(100%)
Drotaverine	49(86%)	7(12.3%)	1(1.8%)	57(100%)
Hyosocine	21(95.5%)	1(4.5%)	0(.0%)	22(100%)
Others	53(93.0%)	0(.0%)	4(7.0%)	57(100%)
Advice	18(54.5%)	0(.0%)	15(45.5%)	33(100%)
Total	396(91.0%)	15(3.4%)	24(5.5%)	435(100%)

Out of 435 participants 396(91.0%) think that upper abdominal pain were caused by acidity, food poisoning, water, appendicitis. 15(3.4%) liver infection & 24(5.5%) no idea out of 435(100%).

Out of 435(100%), Tiemonium Methyl Sulfate prescribe 266(100%) among of them 255(95.9%) for acidity, food poisoning, water, appendicitis. Only 7(2.6%) for liver infection & 4(1.5%) No idea. Drotaverine 57(100%) among those 49(86%) for acidity, food poisoning, water, appendicitis. 7(12.3%) for liver infection & 1(1.8%) for have no any idea. Hyosocine 22(100%) among of them 21(95.5%) for acidity, food poisoning, water, appendicitis. Only 1(4.5%) for liver infection & 0(.0%) for have no any idea. Others 57(100%) among those 53(93.0%) for acidity, food poisoning, water, appendicitis, 0(.0%) for liver infection & 4(7.0%) for have no any idea. advice 33(100%) among of them for 18(54.5%) acidity, food poisoning, water, appendicitis, 0(.0%) for liver infection & 15(45.5%) for have no any idea.



**Fig 13** Treatment against causes of upper abdominal pain

### 7.4.2. Drug selection against causes of Fever

Most retailers of dispensary selected following antibiotics against following causes for the treatment of fever that describe through table 16.

**Table 14** Treatment against causes of fever

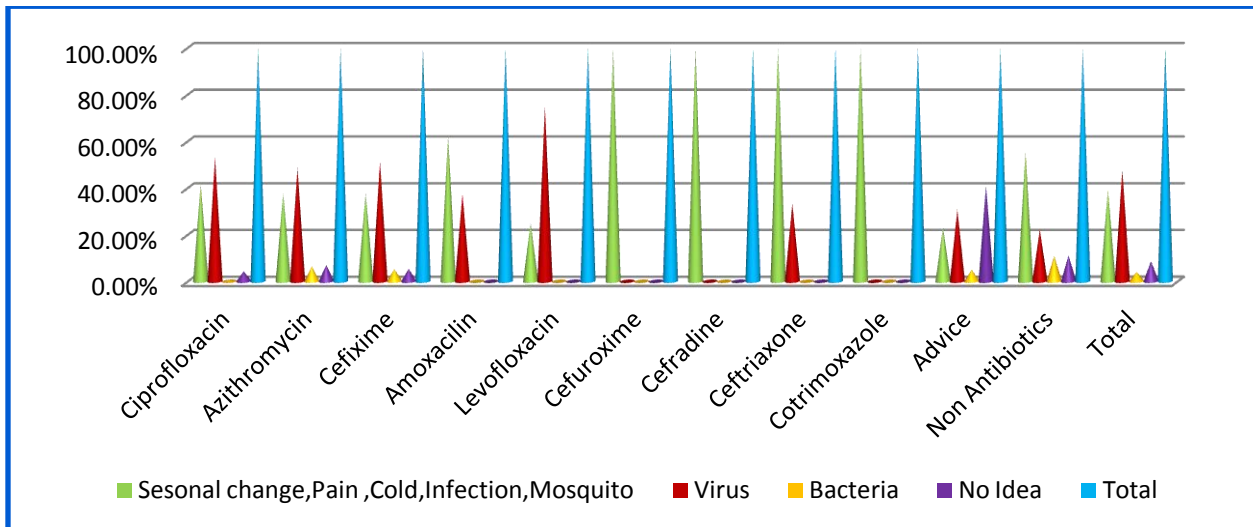
Drug/Antibiotics	Sesonal change,Pain ,Cold,Infection,Mosquito	Virus	Bacteria	No Idea	Total
Ciprofloxacin	59(41.8%)	75(53.2%)	1(.7%)	6(4.3%)	141(100%)
Azithromycin	70(37.8%)	90(48.6%)	12(6.5%)	13(7.0%)	185(100%)
Cefixime	14(37.8%)	19(51.4%)	2(5.4%)	2(5.4%)	37(100%)
Amoxicilin	5(62.5%)	3(37.5%)	0(.0%)	0(.0%)	8(100%)
Levofloxacin	2(25.0%)	6(75.0%)	0(.0%)	0.0% ( )	8(100%)
Cefuroxime	2(100.0%)	0(.0%)	0(.0%)	0(.0%)	2(100%)
Cefradine	1(100.0%)	0(.0%)	0(.0%)	0(.0%)	1(100%)
Ceftriaxone	2(100.0%)	1(33.3%)	0(.0%)	0(.0%)	3(100%)
Cotrimoxazole	2(100.0%)	0(.0%)	0(.0%)	0(.0%)	2(100%)
Advice	9(23.1%)	12(30.8%)	2(5.1%)	6(41.0%)	39(100%)
Non Antibiotics	5(55.6%)	2(22.2%)	1(11.1%)	1(11.1%)	9(100%)
Total	171(39.3%)	208(47.8%)	18(4.1%)	38(8.7%)	435(100%)

Out of the 435(100%), 171(39.3%) retailers of pharmacy said that causes of fever are Seasonal change, Pain ,Cold, Infection, Mosquito & 208(47.8%) said causes of fever is Virus , 18(4.1%) is bacteria & 38(8.7%) no have any idea about causes of fever.

Out of the 435(100%), Ciprofloxacin prescribe 141(100%),among of them 59(41.8%) for Seasonal change ,Pain, Cold, Infection, Mosquito, 75(53.2%) for virus, 1(.7%) for bacteria & 6(4.3%) for no have any idea. Azithromycin 185(100%), among of them 70(37.8%) for Seasonal change, Pain, Cold, Infection, Mosquito, 90(48.6%) for virus, 12(6.5%) for bacteria & 13(7.0%)for no have any idea. Cefixime 37(100%), among of them 14(37.8%) for Seasonal change, Pain, Cold, Infection, Mosquito, 19(51.4%) for virus, 2(5.4%) for bacteria & 2(5.4%) for no have any idea. Amoxicilin 8(100%), among of them 5(62.5%) for Seasonal change, Pain, Cold, Infection, Mosquito, 3(37.5%) for virus, 0(.0%) for bacteria & 0(.0%) for no have any idea. Levofloxacin 8(100%), among of them 2(25.0%) for Seasonal change, Pain, Cold, Infection, Mosquito, 6(75.0%) for virus, 0(.0%) for bacteria & 0(.0%)for no have any idea. Cefuroxime 2(100%), among of them 2(100%), for Seasonal change, Pain, Cold, Infection, Mosquito, 0(.0%)for virus, 0(.0%) for bacteria & 0(.0%) for not have any idea. Cefradine 1(100.0%), among of them 1(100.0%) for Seasonal change, Pain, Cold, Infection, Mosquito, 0(.0%) for virus, 0(.0%) for bacteria & 0(.0%) for not have any idea. Ceftriaxone 3(100%), among of them 2(100.0%) for Seasonal change, Pain, Cold, Infection, Mosquito, 1(33.3%) for virus, 0(.0%) for bacteria & 0(.0%) for not have any idea.Cotrimoxazole2(100.0%), among of them 2(100.0%) for Seasonal change, Pain, Cold, Infection, Mosquito, 0(.0%) for virus, 0(.0%)



for bacteria & 0(.0%) for not have any idea. Advice 39(100%), among of them 9(23.1%) for Seasonal change, Pain, Cold, Infection, Mosquito, 12(30.8%) for virus, 2(5.1%) for bacteria & 6(41.0%) for not have any idea. Non Antibiotics 9(100%), among of them 5(55.6%) for Seasonal change, pain, cold, infection, mosquito, 2(22.2%) for virus, 1(11.1%) for bacteria & 1(11.1%) for not have any idea.



**Fig 14** Treatment against causes of fever

### 7.4.3. Drug selection against causes of Diarrhoea

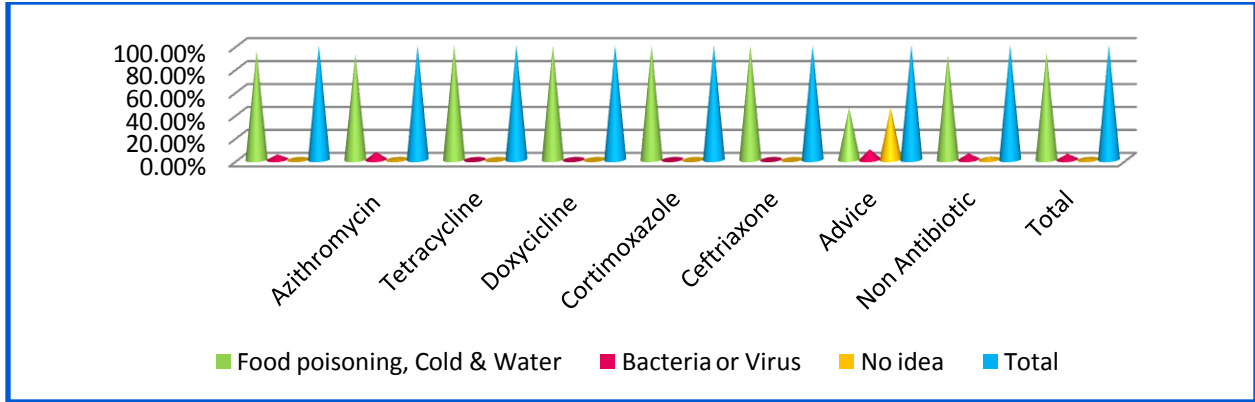
Most retailers of pharmacies selected following drugs for the treatment of diarrhea against following causes that describe in table 15.

**Table 15** Treatment against causes of Diarrhoea

Drug/Antibiotics	Food poisoning, Cold & Water	Bacteria or Virus	No idea	Total
Cefprofloxacin	271(95.1%)	13(4.6%)	1(.4%)	285(100%)
Azithromycin	81(92%)	6(6.6%)	1(1.1%)	88(100%)
Tetracycline	11(100%)	0(0%)	0(0%)	11(100%)
Doxycycline	1(100%)	0(0%)	0(0%)	1(100%)
Cortimoxazole	1(100%)	0(0%)	0(0%)	1(100%)
Ceftriaxone	1(100%)	0(0%)	0(0%)	1(100%)
Advice	5(45.5%)	1(9.1%)	5(45.5%)	11(100%)
Non Antibiotic	34(91.9%)	2(5.4%)	1(2.7%)	37(100%)
Total	405(93.1%)	22(5.1%)	8(1.5%)	435(100%)

Out of the 435(100%), 405(93.1%) think that diarrhoea occurred by food poisoning, cold & water. 22(5.1%) assumed causes of diarrhea is Bacteria or Virus & 8(1.5%) no idea.

Out of 435(100%), Cefprofloxacin prescribe 285(100%), among of them 271(95.1%) for food poisoning, Cold & Water, 13(4.6%) for Bacteria or Virus & 1(.4%) for not have any idea. Azithromycin 88(100%) among of them 81(92%) for Food poisoning, Cold & Water, 6(6.6%) for Bacteria or Virus & 1(1.1%) for not have any idea. Tetracycline 11(100%), among of them 11(100%) for Food poisoning, Cold & Water, 0(0%) for Bacteria or Virus & 0(0%) for not have any idea. Doxycycline 1(100%), among of them 1(100%) for Food poisoning, Cold & Water, 0(0%) for Bacteria or Virus & 0(0%) for not have any idea. Cotrimoxazole 1.(100%), among of them 1(100%)for Food poisoning, Cold & Water, 0(0%) for Bacteria or virus & 0(0%)for not have any idea. Ceftriaxone 1. (100%), among of them 1(100%) for food poisoning, cold & water, 0(0%) for Bacteria or Virus & 0(0%)for not have any idea. Advice 11(100%) among of them for 5(45.5%) food poisoning, cold & water, for 1(9.1%) bacteria or virus & 5(45.5%) for not have any idea. Non Antibiotic 37(100%), among of them 34(91.9%) for food poisoning, cold & water, 2(5.4%) for bacteria or virus & 1(2.7%) for not have any idea.



**Fig 15** Treatment against causes of Diarrhoea

### 7.4.4. Drug selection against causes of UTIs

Following drugs were prescribed for the treatment of UTIs against following causes through retailers that shown in the table number 17.

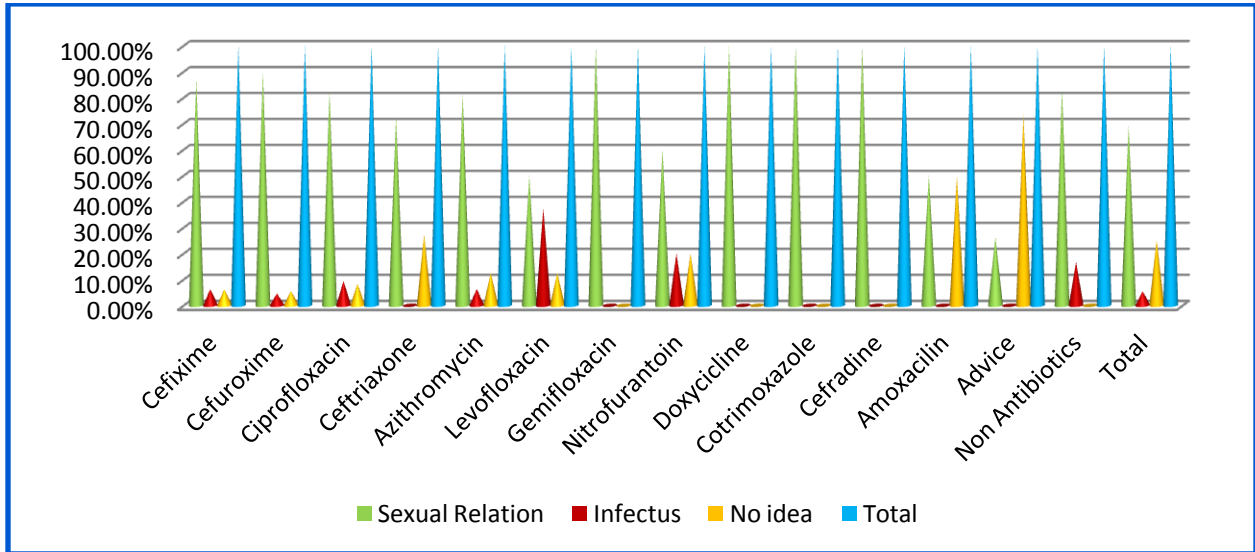
**Table 16** Treatment against causes of UTIs

Drug/Antibiotics	Sexual Relation	Infectus	No	Total
Cefixime	55(87.3%)	4(6.3%)	4(6.3%)	63(100%)
Cefuroxime	97(89.8%)	5(4.6%)	6(5.6%)	108(100%)
Ciprofloxacin	79(82.3%)	9(9.4%)	8(8.3%)	96(100%)
Ceftriaxone	8(72.7%)	0(.0%)	3(27.3%)	11(100%)
Azithromycin	13(81.3%)	1(6.3%)	2(12.5%)	16(100%)
Levofloxacin	4(50.0%)	3(37.5%)	1(12.5%)	8(100%)
Gemifloxacin	1(100%)	0(.0%)	0(.0%)	1(100%)
Nitrofurantoin	3(60.0%)	1(20.0%)	1(20.0%)	5(100%)
Doxycycline	2(100%)	0(.0%)	0(.0%)	2(100%)
Cotrimoxazole	1(100%)	0(.0%)	0(.0%)	1(100%)
Cefradine	2(100%)	0(.0%)	0(.0%)	2(100%)
Amoxicilin	1(50%)	0(.0%)	1(50%)	2(100%)
Advice	30(26.3%)`	0(.0%)	84(73.7%)	114(100%)
Non Antibiotics	5(83.3%)	1(16.7%)	0(.0%)	6(100%)
Total	301(69.2%)	24(5.5%)	110(25.3%)	435(100%)

Out of 435(100%) retailers of dispensary, 301(69.2%) think that UTIs occurred by sexual relation, 24(5.5%) said causes of UTIs is infectious & 110(25.3%) said that they have not any idea about UTIs.

Out of 435(100%), Cefixime prescribe 63(100%),among which 55(87.3%) for sexual relation, 4(6.3%)infectious & 4(6.3%) not have any idea. Cefuroxime 108(100%), among which 97(89.8%) for sexual relation, 5(4.6%)for infectious & 6(5.6%) for not have any idea. Ciprofloxacin 96(100%),among which 79(82.3%) for sexual relation, 9(9.4%) for infectious & 8(8.3%)for not have any idea.Ceftriaxone11(100%),among which 8(72.7%) for sexual relation, 0(.0%) for infectious & 3(27.3%) for not have any idea. Azithromycin 16(100%),among which 13(81.3%) for sexual relation, 1(6.3%)for infectious & 2(12.5%) for not have any idea.Levofloxacin8(100%),among which 4(50.0%) for sexual relation, 3(37.5%) for infectious & 1(12.5%) for not have any idea.Gemifloxacin1(100%), among which 1(100%) for sexual relation, 0(.0%) for infectious & 0(.0%) for not have any idea.Nitrofurantoin5(100%),among which 3(60.0%) for sexual relation, 1(20.0%) for infectious & 1(20.0%) for not have any idea. Doxycycline2(100%),among which 2(100%) for sexual relation, 0(.0%) for infectious & 0(.0%) for not have any idea.Cotrimoxazole,1(100%), among which 1(100%) for sexual relation, 0(.0%) for infectious & 0(.0%) for not have any idea.Cefradine,2(100%),among which 2(100%) for sexual relation, 0(.0%) for infectious & 0(.0%) for not have any idea.Amoxicilin2(100%),among

which 2(100%) for sexual relation, 0(.0%) for infectious & 2(100%)for not have any idea. Advice 114(100%), among which 30(26.3%) for sexual relation, 0(.0%) for infectious & 84(73.7%) for not have any idea. on Antibiotics 6(100%), among which 5(83.3%) for sexual relation, 1(16.7%) for infectious & 0(.0%) for not have any idea.



**Fig 16** Treatment against causes of UTIs

## 7.5. Districts wise prescribe of antibiotics by drug retailers of Bangladesh

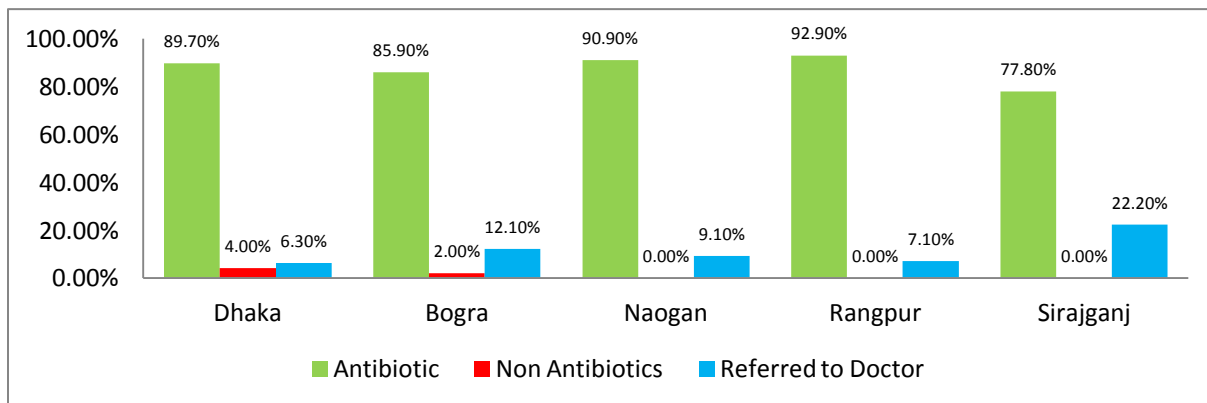
### 7.5.1. Districts & Percentage of antibiotics suggest for the treatment of Fever

Percentage of antibiotics prescribed by retailers of pharmacy in the following districts that shown in bellow table 18.

**Table 17** Districts & Percentage of antibiotics suggest for the treatment of Fever

Districts	Antibiotic	Non Antibiotics	Referred to Doctor	Total
Dhaka	226(89.7%)	10(4.0%)	16(6.3%)	252(100.0%)
Bogra	128(85.9%)	3(2.0%)	18(12.1%)	149(100.0%)
Naogan	10(90.9%)	0(.0%)	1(9.1%)	11(100.0%)
Rangpur	13(92.9%)	0(.0%)	1(7.1%)	14(100.0%)
Sirajganj	7(77.8%)	0(.0%)	2(22.2%)	9(100.0%)
Total	384(88.3%)	13(3.0%)	38(8.7%)	435(100%)

Among six districts ,In Dhaka 226(89.7%) prescribe antibiotics, 10(4.0%) non antibiotics & 16(6.3%) referred to doctors for the treatment of fever total of 252(100.0%) out of 453(100%). In Bogra 128(85.9%) prescribe antibiotics, 3(2.0%) non antibiotics & 18(12.1%) referred to doctors for the treatment of fever total of 149(100.0%) out of 453(100%). In Naogan 10(90.9%) prescribe antibiotics, 0(.0%) non antibiotics & only 1(9.1%) referred to doctors for the treatment of fever total of 11(100%) out of 453(100%). In Rangpur 13(92.9%) prescribe antibiotics, 0(.0%) non antibiotics & only 1(7.1%) referred to doctors for the treatment of fever total of 14(100%) out of 453(100%). In Sirajganj 7(77.8%) prescribe antibiotics, 0(.0%) non antibiotics & 2(22.2%) referred to doctors for the treatment of fever total of 9(100%) out of 453(100%).



**Fig 17** Districts & percentage of antibiotics suggest for the treatment of fever

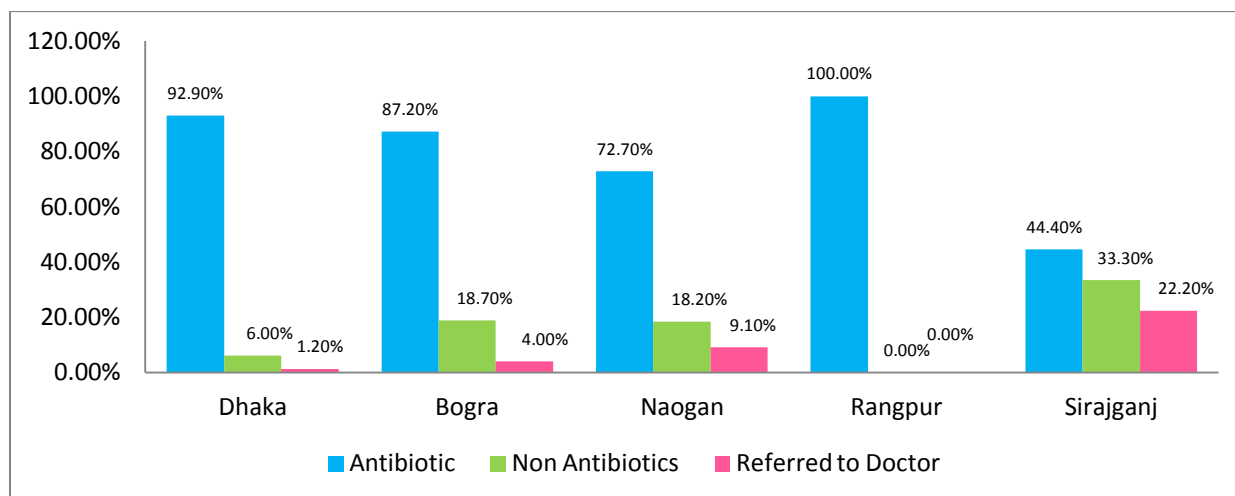
**7.5.2. Districts & Percentage of antibiotics suggest for the treatment of Diarrhoea**

Percentage of antibiotics prescribed for the treatment of diarrhoea by retailers of dispensary in the following districts that shown in bellow table 19.

**Table 18** Districts & percentage of antibiotics suggest for the treatment of diarrhoea

Districts	Antibiotic	Non Antibiotics	Referred to Doctor	Total
Dhaka	234(92.9%)	15(6.0%)	3(1.2%)	252(100.0%)
Bogra	130(87.2%)	13(8.7%)	6(4.0%)	149(100.0%)
Naogan	8(72.7%)	2(18.2%)	1(9.1%)	11(100.0%)
Rangpur	14(100.0%)	0(0.0%)	0(0.0%)	14(100.0%)
Sirajganj	4(44.4%)	3(33.3%)	2(22.2%)	9(100.0%)
Total	390(89.7%)	33(7.6%)	12(2.8%)	435(100.0%)

In Dhaka 234(92.9%) prescribe antibiotics, 15(6.0%) non antibiotics & only 3(1.2%) referred to doctors for the treatment of Diarrhoea total of 252(100.0%) out of 453(100%). In Bogra 130(87.2%) prescribe antibiotics, 13(8.7%) non antibiotics & 6(4.0%) referred to doctors for the treatment of Diarrhoea total of 149(100.0%) out of 453(100%). In Naogan 8(72.7%) prescribe antibiotics, 2(18.2%) non antibiotics & only 1(9.1%) referred to doctors for the treatment of Diarrhoea total of 11(100%) out of 453(100%). In Rangpur 14(100.0%) prescribe antibiotics, 0(0.0%) non antibiotics & 0(0.0%) referred to doctors for the treatment of Diarrhoea total of 14(100%) out of 453(100%). In Sirajganj 4(44.4%) prescribe antibiotics, 3(33.3%) non antibiotics & only 2(22.2%) referred to doctors for the treatment of Diarrhoea total of 9(100%) out of 453(100%).



**Fig 18** Districts & Percentage of antibiotics suggest for the treatment of Diarrhoea

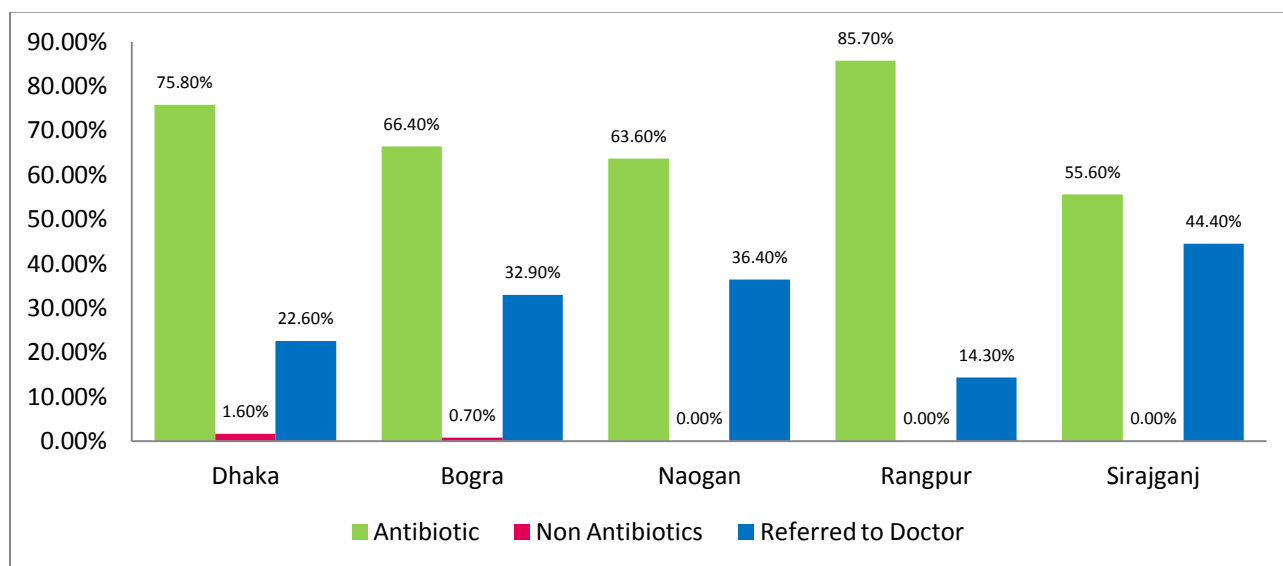
### 7.5.3. Districts & Percentage of antibiotics suggest for the treatment of UTIs

Percentage of antibiotics prescribed for the treatment of UTIs by retailers of dispensary in the following districts that shown in bellow table 19.

**Table 19** Districts & Percentage of antibiotics suggest for the treatment of UTIs

Districts	Antibiotic	Non Antibiotics	Referred to Doctor	Total
Dhaka	191(75.8%)	4(1.6%)	57(22.6%)	252(100.0%)
Bogra	99(66.4%)	1(.7%)	49(32.9%)	149(100.0%)
Naogan	7(63.6%)	0(.0%)	4(36.4%)	11(100.0%)
Rangpur	12(85.7%)	0(.0%)	2(14.3%)	14(100.0%)
Sirajganj	5(55.6%)	0(.0%)	4(44.4%)	9(100.0%)
Total	314(72.2%)	5(1.1%)	116(26.7%)	435(100%)

In Dhaka 191(75.8%) prescribe antibiotics, only 4(1.6%) non antibiotics & 57(22.6%) referred to doctors for the treatment of UTIs total of 252(100.0%) out of 453(100%). In Bogra 99(66.4%) prescribe antibiotics, only 1(.7%) non antibiotics & 49(32.9%) referred to doctors for the treatment of UTIs total of 149(100.0%) out of 453(100%). In Naogan 7(63.6%) prescribe antibiotics, 0(.0%) non antibiotics & only 4(36.4%) referred to doctors for the treatment of UTIs total of 11(100%) out of 453(100%). In Rangpur 12(85.7%) prescribe antibiotics, 0(.0%) non antibiotics & only 2(14.3%) referred to doctors for the treatment of UTIs total of 14(100%) out of 453(100%). In Sirajganj 5(55.6%) prescribe antibiotics, 0(.0%) non antibiotics & 4(44.4%) referred to doctors for the treatment of UTIs total of 9(100%) out of 453(100%).



**Fig 19** Districts & Percentage of antibiotics suggest for the treatment of UTIs



## 7.6. Prescribe of combined drugs for the treatment of a single disease by drug retailers of Bangladesh

### 7.6.1. Combined drugs for the treatment of Pain

Number of drugs at a time as combined for the treatment of pain that prescribed by retailers of dispensary shown in bellow table 21.

**Table 20** Combined drugs for the treatment of Pain

Combined Drug	Frequency	Percent
Single drug	51	11.7
Two drugs	261	60.0
Three drugs	74	17.0
Four drugs	16	3.7
Advice	33	7.6
Total	435	100.0

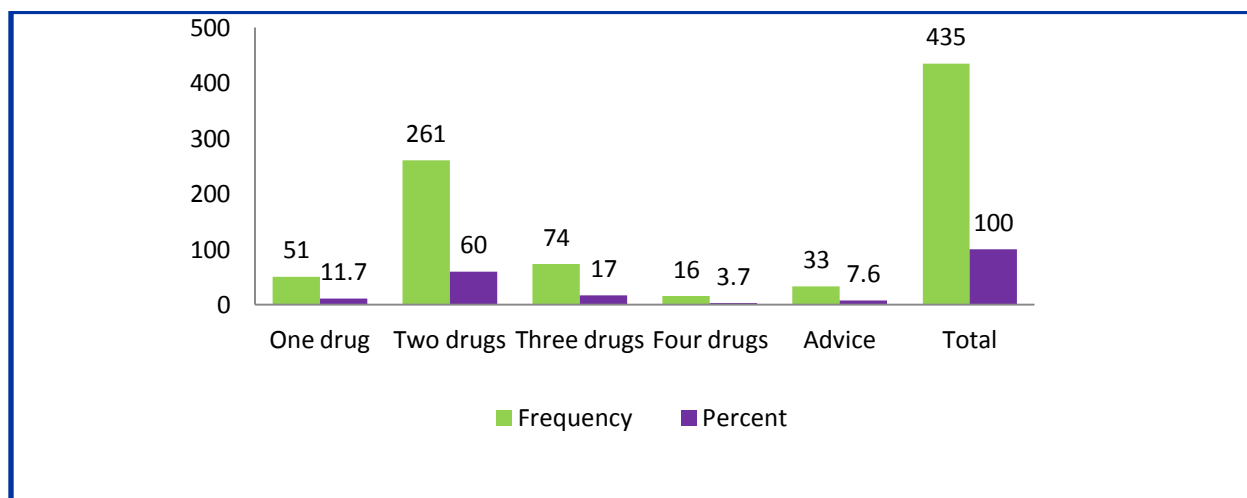
51(11.5%) retailers prescribe single drug for the treatment of Pain out of 435(100.0%)

261(60.0%) retailers prescribe two drugs simultaneously for the treatment of Pain out of 435(100.0%)

74(17.0%) retailers prescribe three drugs simultaneously for the treatment of Pain out of 435(100.0%)

16(3.7%) retailers prescribe four drugs simultaneously for the treatment of Pain out of 435(100.0%)

33(7.6%) retailers referred to doctor for the treatment of Pain out of 435(100.0%)



**Fig 20** Combined drugs for the treatment of Pain

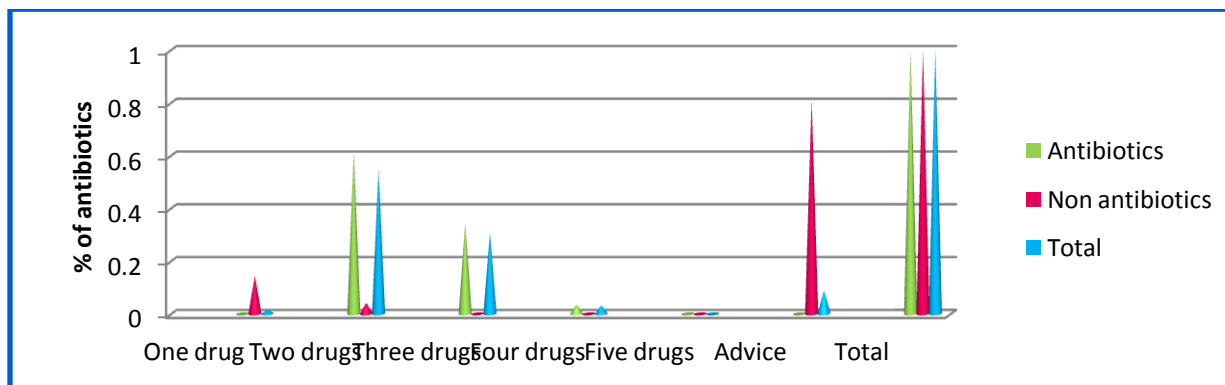
**7.6.2. Combined drugs for the treatment of Fever**

Number of drugs at a time as combined for the treatment of fever that prescribed by retailers of dispensary shown in bellow table 22.

**Table 21** Combined drugs for the treatment of Fever

Combined Drug	Antibiotics	Non antibiotics	Total
Single drug	0(0.0%)	7(14.6%)	7(1.6%)
Two drugs	238(61.5%)	2(4.2%)	240(55.2%)
Three drugs	134(34.6%)	0(.0%)	134(30.8%)
Four drugs	14(3.6%)	0(0.0%)	14(3.2%)
Five drugs	1(.3%)	0(0.0%)	1(.2%)
Advice	0(0.0%)	39(81.3%)	39(9.0%)
Total	387(100.0%)	48(100.0%)	435(100.0%)

7(1.6%) only retailers prescribe single drug for the treatment of fever out of 435(100.0%)  
 240(55.2%) retailers prescribe two drugs simultaneously among which 238(61.5%) antibiotics & 2(4.2%) non antibiotics for the treatment of fever out of 435(100.0%).  
 134(30.8%) retailers prescribe three drugs simultaneously among which 134(34.6%) antibiotics & 0(0.0%) non antibiotics for the treatment of fever out of 435(100.0%).  
 14(3.2%) retailers prescribe four drugs simultaneously among which 14(3.6%) antibiotics & 0(0.0%) non antibiotics for the treatment of fever out of 435(100.0%).  
 1(.2%) retailers prescribe five drugs simultaneously among which 1(.3%) antibiotics & 0(0.0%) non antibiotics for the treatment of fever out of 435(100.0%).  
 39(9.0%) retailers referred to doctor among which 0(0.0%) antibiotics & 39(81.3%) non antibiotics for the treatment of fever out of 435(100.0%).



**Fig 21** Combined drugs for the treatment of Fever

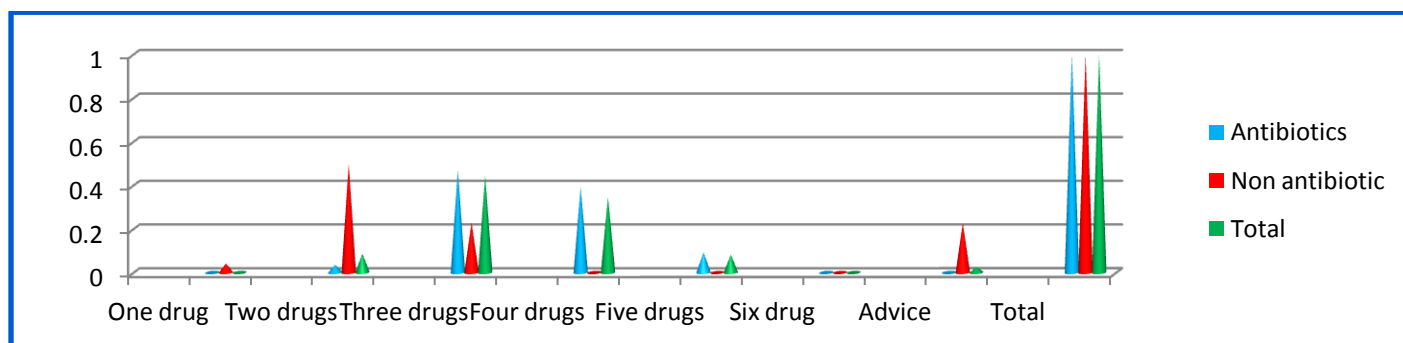
### 7.6.3. Combined drugs for the treatment of Diarrhoea

Number of drugs at a time as combined for the treatment of diarrhoea that prescribed by retailers of dispensaries shown in bellow table 23.

**Table 22** Combined drugs for the treatment of Diarrhoea

Combined Drugs	Antibiotics	Non antibiotic	Total
Single drug	1(.3%)	2(4.2%)	3(.7%)
Two drugs	14(3.6%)	24(50.0%)	38(8.7%)
Three drugs	183(47.3%)	11(22.9%)	194(44.6%)
Four drugs	152(39.3%)	0(.0%)	152(34.9%)
Five drugs	36(9.3%)	0(.0%)	36(8.3%)
Six drug	1(.3%)	0(.0%)	1(.2%)
Advice	0(.0%)	11(22.9%)	11(2.5%)
Total	387(100.0%)	48(100.0%)	435(100.0%)

3(.7%) only retailers prescribe single drug among which 1(.3%) antibiotics & 2(4.2%) non antibiotics for the treatment of diarrhoea out of 435(100.0%).28(8.7%) retailers prescribe two drugs simultaneously among which 14(3.6%) antibiotics & 24(50.0%) non antibiotics for the treatment of diarrhoea out of 435(100.0%).194(44.6%) retailers prescribe three drugs simultaneously among which 183(47.3%) antibiotics & 11(22.9%) non antibiotics for the treatment of diarrhoea out of 435(100.0%).152(34.9%) retailers prescribe four drugs simultaneously among which 152(34.9%) antibiotics & 0(.0%) non antibiotics for the treatment of diarrhoea out of 435(100.0%).36(.2%) retailers prescribe five drugs simultaneously among which 1(.3%) antibiotics & 0(.0%) non antibiotics for the treatment of diarrhoea out of 435(100.0%).1(8.3%) retailers prescribe six drugs simultaneously among which 36(95%) antibiotics & 0(.0%) non antibiotics for the treatment of diarrhoea out of 435(100.0%).11(2.5%) retailers referred to doctor among which 0(.0%) antibiotics & 11(22.9%) non antibiotics for the treatment of diarrhoea out of 435(100.0%).



**Fig 22** Combined drugs for the treatment of Diarrhoea

### 7.6.4. Combined drugs for the treatment of UTIs

Number of drugs at a time as combined for the treatment of UTIs that prescribed by retailers of dispensaries shown in bellow table 24.

**Table 23** Combined drugs for the treatment of UTIs

Combined Drug	Atibiotics	Non antibiotics	Total
Single drug	27(8.6%)	3(2.5%)	30(6.9%)
Two drugs	113(35.9%)	3(2.5%)	116(26.7%)
Three drugs	134(42.5%)	0(.0%)	134(30.8%)
Four drugs	37(11.7%)	0(.0%)	37(8.5%)
Five drugs	4(1.3%)	0(.0%)	4(.9%)
Advice	0(.0%)	114(95.0%)	114(26.2%)
Total	315(100.0%)	120(100.0%)	435(100.0%)

30(6.9%) only retailers prescribe single drug among which 27(8.6%) antibiotics & 3(2.5%) non antibiotics for the treatment of UTIs out of 435(100.0%)

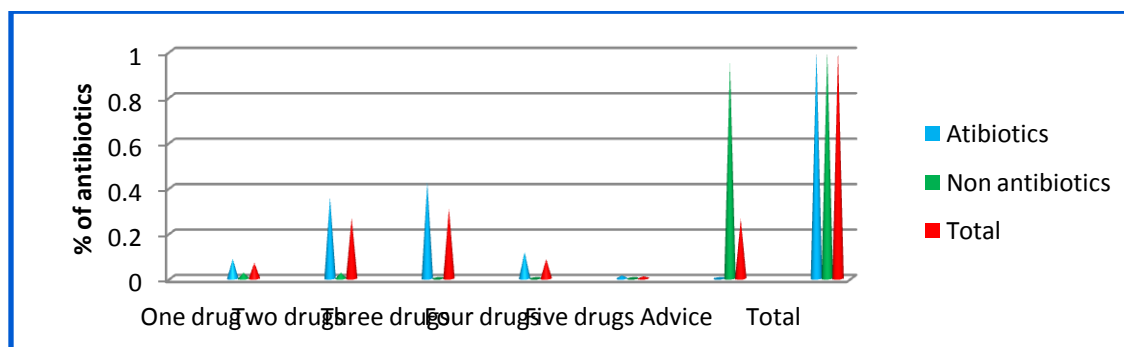
166(26.7%) retailers prescribe two drugs simultaneously among which 113(35.9%) antibiotics & 3(2.5%) non antibiotics for the treatment of UTIs out of 435(100.0%).

134(30.8%) retailers prescribe three drugs simultaneously among which 134(42.5%) antibiotics & 0(.0%) non antibiotics for the treatment of UTIs out of 435(100.0%).

37(8.5%) retailers prescribe four drugs simultaneously among which 37(11.7%) antibiotics & 0(.0%) non antibiotics for the treatment of UTIs out of 435(100.0%).

4(.9%) retailers prescribe five drugs simultaneously among which 4(1.3%) antibiotics & 0(.0%) non antibiotics for the treatment of UTIs out of 435(100.0%).

114(26.2%) retailers referred to doctor among which 0(.0%) antibiotics & 114(95.0%) non antibiotics for the treatment of UTIs out of 435(100.0%).



**Fig 23** Combined drugs for the treatment of UTIs

### Educational qualification:

Educational qualification of drug retailers that shown in table 24

	Frequency	Percent
SSC	90	20.7
HSC	180	41.4
Degree	83	19.1
Masters in Arts	26	5.3
Paramedical	10	2.3
Diploma in Pharmacy	8	1.8
Others	38	8.73
Total	435	100

Educational qualification of retailers those are involved to prescribe drugs against various diseases 20.7% SSC, 41.4% HSC,19.1% Degree,5.3% Masters in arts, only 2.3% Paramedical & 1.8% Diploma in Pharmacy & others 8.73%. It has find out that most of retailers don't have sufficient knowledge about drugs & diseases & most of them prescribe unnecessary drugs for treatment which is not cost effective for patients & increases health hazard.

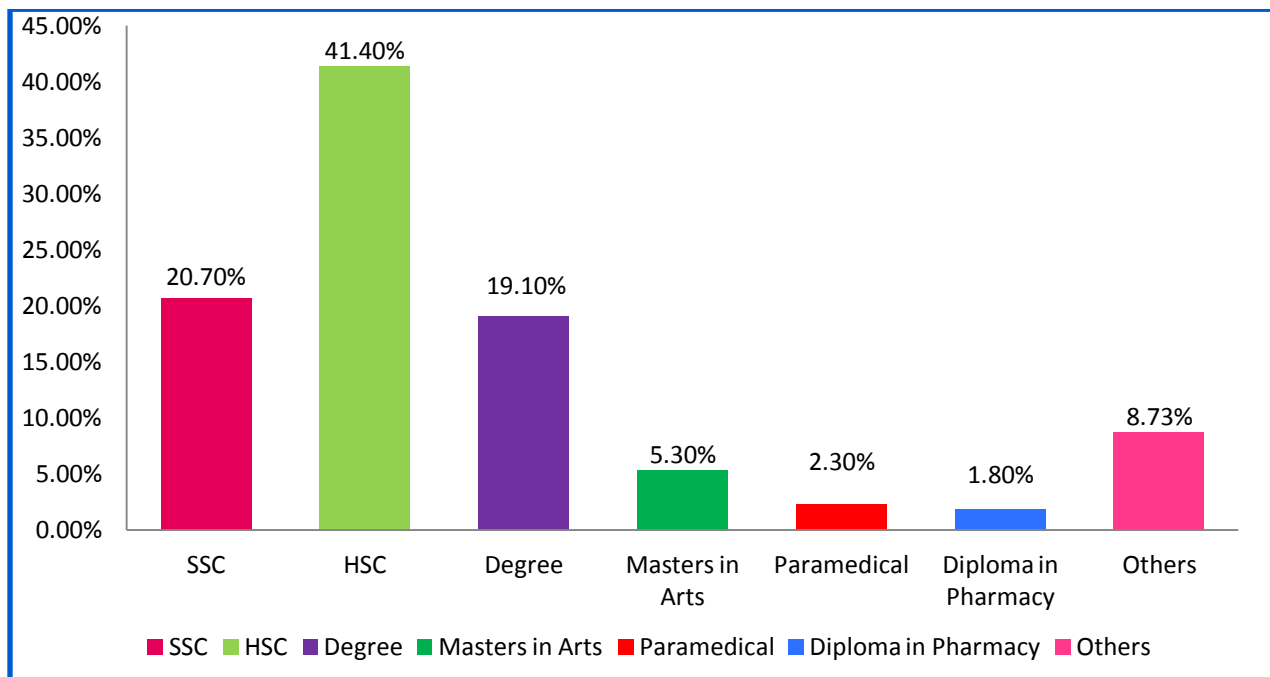


Fig 24 Educational qualification of retailers

# **CHAPTER 8**

# **CONCLUSION**

## Conclusion

From the survey it has found that most of the drug retailers of Bangladesh prescribe drugs without any prescription. Even in serious cases of patients they try to give treatment. Most of the retailers of dispensary don't have sufficient knowledge about diseases & their primary causes. Also they don't consider financial condition of patients & prescribe more expensive & one than more drugs for the treatment that is no need for the patients only for selling purpose & make money. It also has found that most of retailers prescribe antibiotics in any cases. They prescribe higher antibiotics for rapidly cure of diseases in the severe even in primary situation that can solved be by lower antibiotics or without antibiotics. In the suspect condition of diseases most of retailers prescribe two types of antibiotics with antifungal drugs simultaneously because they believe that if one will not work then other will work. In rural area of Bangladesh most of the patients think that retailers of pharmacy are doctors & they believe that he is good doctor who can cure diseases rapidly anyhow but most of the patients don't know it may make health hazard because most of them uneducated. If these situations go on at a time people of Bangladesh will face many health problem.

# **CHAPTER 9**

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