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***A SURVEY ON  
PRESCRIPTION PATTERN OF THREE  
UPAZILA HEALTH COMPLEXES  
OF BANGLADESH***

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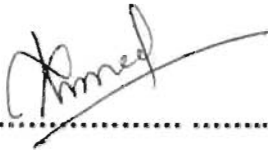
I also acknowledge to all the physicians, staff and nurses of upazila health complexes who help me all the time.

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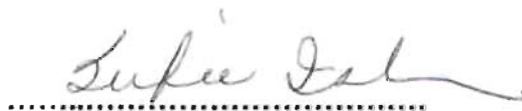
I express my sincere thankfulness to my caring parents for guiding me all through my life, including that for my research project. I am very grateful to my sister, brother and friends, who encourage me enormously.

### CERTIFICATE

This is to certify that the thesis “Prescription Pattern of Uazilla health Complexes of Bangladesh” submitted to the Department of Pharmacy, East West University, Mohakhali, Dhaka in partial fulfillment to the requirements for the degree of Bachelor of Pharmacy (B.Pharm) was carried out by Md. Shaidur Rahman Chowdhury (ID: 2007-3-70-075) under our guidance and supervision and that no part of the thesis has been submitted for any other degree. We further certify that all the sources of information availed of this connection is duly acknowledge.



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*This thesis paper is dedicated to my beloved parents, sister &  
All freedom fighter of Bangladesh*

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**Abstract:**

In developing countries like Bangladesh, medically inappropriate, ineffective, and economically inefficient use of pharmaceuticals is commonly observed in the health care system throughout the world. Various forms of inappropriate prescribing often remain unnoticed by those who are involved in health sector decision making or delivery of health services. This problem will usually come to the attention of health decision makers or managers when there is an acute shortage of pharmaceutical budget and action for cost efficiency is required.

This study investigated the pattern of utilization of health care services provided by the Upazila Health Complex (UHC). The overall aim of the study was to identify the factors that are affecting the use of Health Care (HC) services and to provide policy recommendations for improving the utilization of HC facilities at the UHC level. The study focuses on socio-economic factors, knowledge and attitude of the people and demographic factors that are affecting the use of HC services from population perspectives. The irrational use of drugs in the health care system is not only because of the financial reasons but also the policy makers and managers are usually most concerned. Irrational use of drug is harmful for the patients and for the nations.

# CHAPTER 1



**Introduction:**

Bangladesh is a mostly rural, developing country of South Asia, located on the northern shore of the Bay of Bengal, covering 147,570 square km. People of this country are known as hardworking, with proven capability to preserve mental strength in the event of unexpected extensive loss due to natural calamities, such as floods, cyclones, epidemics, etc. But, their basic needs have remained unfulfilled. Health is a basic requirement to improve the quality of life. National economic and social development depends on the status of a country's health facilities. A health care system reflects the socio-economic and technological development of a country and is also a measure of the responsibilities a community or government assumes for its people's health care. The effectiveness of a health system depends on the availability and accessibility of services in a form which the people are able to understand, accept and utilize. [1]

One most important thing in health system is the rational use of drug. According to WHO rational use of medicines requires that

*"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"*

Rational use of medicines is a major problem worldwide. WHO estimates that more than half of all medicines are prescribed, dispensed or sold inappropriately, and that half of all patients fail to take them correctly. The over use, under use or misuse of medicines results in wastage of scarce resources and widespread health hazards. Examples of irrational use of medicines include: use of too many medicines per patient ("poly-pharmacy"); inappropriate use of antimicrobials, often in inadequate dosage, for non-bacterial infections; over-use of injections when oral formulations would be more appropriate; failure to prescribe in accordance with clinical guidelines; inappropriate self-medication, often of prescription-only medicines; non-adherence to dosing regimes.[2]

The Government of Bangladesh is constitutionally committed to "the supply of basic medical requirements to all levels of the people in the society" and the

“improvement of nutrition status of the people and public health status” (Bangladesh Constitution, Article-18). Bangladesh introduced the national drug policy in 1982. This policy obtained great success in drug management. The policy’s first effects were to establish a list of 250 essential drugs & to remove about 1707 useless, harmful, ineffective drug from the market. The policy has increased the production of essential drugs, controlled the drug prices within affordable limits. But, a large number of people of Bangladesh, particularly in rural areas, remain with no or little access to health care facilities. It would be critical for making progress in Bangladesh’s health services to improve the people’s participation in the health sector. Bangladesh has a good infrastructure for delivering primary health care, but the full potential of this infrastructure has due to lack of adequate logistics never been utilized.[3]

The object of this study is to analyze the health care facilities in rural areas where remain with no or little access to health care facilities. For this purpose, the upazila health complex is most valuable which is generally termed as primary health care centers. In this study I tried to document diseases management practice in the government primary health care centers & to access the reasons why prescriber’s dispensing behavior as the do, i.e. to evaluate the significance of the different pressures and constraints put on them. Once the major constrains and pressures are assessed, it will be possible to identify the potential intervention strategies to improve prescribing and dispensing and promote rational use of drugs. The need for promoting appropriate use of drug in the health care system is not only because of the financial reasons but also the policy makers and managers are usually concerned. Appropriate use of drug Is also one essential element in achieving quality of health and medical care for patients and the community. Obviously, this should also become the concern of practitioners. Actions or intervention programs to promote the appropriate use of drugs should therefore, be continuously implemented and systematically incorporated as an integral part of the health care system.

#### **Factors Underlying Irrational Use of Drugs:**

There are many different factors which affect the irrational use of drugs. The major factors can be categorized as those deriving from patients, prescribes, the workplace, the supply system including industry influences, regulation, drug information, miss information & combination of these factors.[4]

**Patients (Drug misinformation):**

- Misleading beliefs
- Patient demands or expectations

**Prescribers ( lack of education & training)**

- Inappropriate role models
- Lack of objective drug information
- Generalization of limited experience
- Misleading beliefs about drug efficacy

**Drug supply system (unreliable suppliers):**

- Drug shortages
- Expired drug supplied

**Drug regulation (non essential drug available):**

- Non-formal prescribers
- Lack of regulation enforcement

**Industry (promotional activities)**

- Misleading claims

**Outcome of Irrational use of Drug:**

Some of the identifiable public health consequences of irrational drug use include:

1. Increased morbidity and mortality due to avoidable treatment failure and reduction in the quality of drug therapy
2. Increase risk of unwanted effects such as adverse drug reactions
3. Waste of resources such as reduced availability, increased cost
4. Psycho-social impacts such as patients rely on unnecessary drugs. [5]

**Primary Health Care Facilities in Bangladesh:**

The hospitals and health facilities which are located in the upazila level and below are in general termed as primary health care centers. However, many of the upazila health complexes have clinical specialists who provide specialty care to the visiting patients. The district hospitals are usually termed secondary hospitals as these have fewer specialty cares unlike many present in the medical college hospitals. Bangladesh has built over the

past decades a good network for primary care hospitals and health centers to cater primary and referral health care to its citizens. [7]

Table-I. Primary health care hospitals and health centers (Year 2010) [7]

Type of Hospitals / Health Centers	No. of facilities	No. of functional beds
<b>Upazila Health Complexes (run by DGHS)</b>		
Upazila Health Complex (50 bed)	156	7,800
Upazila Health Complex (31 bed)	250	7,750
Upazila Health Complex (new 31 bed)	7	217
Upazila Health Complex (10-bed)	11	110
Total Upazila Health Complexes =	<b>424</b>	<b>15,877</b>
<b>Other Hospitals at Upazila level (run by DGHS)</b>		
10-bed Hospital (Rural Health Center)	10	100
10-bed Hospital (new)	3	30
31-bed Hospital	4	124
20-bed Hospital	14	280
20-bed Trauma Center	5	100
Total Other Hospitals at Upazila level =	<b>36</b>	<b>634</b>
Total Hospitals at Upazila level =	<b>460</b>	<b>16,511</b>

### Common Diseases That Were Diagnosed at the Upazila Health Complexes:

#### 1. Viral Fever

Viral fever is due to an infection caused by a virus, a tiny transmittable agent that can only live and reproduce within another organism's cells. The fever can reach more than 40 degrees Celsius and can last for 10 to 14 days. There are different symptoms of a viral infection.

Viral fever is the first symptom of a viral infection. When a virus penetrates your body, your defense system reacts by fighting it; thus, causing the high temperature. However, a fever is not the indication of a virus because a bacterial infection can also cause high fever. Sometimes, a viral infection can occur without fever, which can be dangerous as you are not aware that you have it.

When you are suffering from viral fever, you experience a very warm body temperature. You also feel pain in your body, and muscle. Your joints also swell and hurt a lot and you feel very weak, uneasy, and uncomfortable. You will develop rashes and a yellowish color on your skin. Your eyes constantly water and you will have a cold, runny nose, and nasal congestion. You will have no appetite to eat and you tend to vomit more. Diarrhea will also strike.

There are many ways to diagnose a viral fever. One of them is to have a complete blood count that will reveal the status and condition of your red and white blood cells. Others include a peripheral blood smear and nasal swabs.

For viral fever treatment, it is important to have regular workouts to strengthen the immune system. A strong immune system will kill a virus. You should constantly wash your hands, as you do not know what types of viruses are stuck on them. Avoid smoking cigarettes and drinking alcohol because these will weaken the immune system. If you need to drink water, make sure it is distilled or pre-boiled, and drink plenty of it. A viral fever comes with the common colds. If you need to sneeze or cough, cover your mouth with a handkerchief or a tissue paper. You can blow your nose when you are in the bathroom. Sometimes a viral fever will block your nose. You can go to a sauna and undergo steam inhalation to unblock the nose.

There are many medications for viral fever. These are ibuprofen acetaminophen, and other anti-virals. There are also vaccinations to prevent viruses entering your body. It is also important to drink lots of water to be hydrated always.

There are also home remedies for viral fever. One of them is placing an ice pack or a cold compress on the forehead. This will lessen the chance of the fever going up to the brain. You can also rub your whole body with a washcloth that has been soaked in cool water to bring the temperature down. As you sleep, make sure you are dressed in light clothes so as not to trap in heat and worsen skin rashes. You must also sleep in a cool room so as not become warmer due to the heat.

A virus can be acquired through the mouth and the nose. One of the causes of viral infection is when you breathe in particles that have the germs of viruses. Food and water can also carry these viruses. Once these get inside a cell through the nose or mouth, they will grow there and destroy the cell eventually as the virus enters the body.

Your doctor can also give you a diagnosis of a viral infection if you suffer from diarrhea and vomiting. This means the virus has entered the digestive system, particularly the gastrointestinal tract. Because both diarrhea and vomiting can lose essential body fluids that lead to dehydration, it is important to drink lots of water every day.

When you find yourself bleeding while having fever, this may be due to viral hemorrhagic fever. When this happens, the body organs are damaged and no longer have the ability to heal by themselves. The outcome can be either mild or disastrous.

There are certain people who should take good care not to be infected with a viral infection because of their condition. These are pregnant women and small children. People who have a weak immune system should not catch a viral flu because this can harm their health. They will not be able to strongly fight away the conditions that a viral fever brings. Some of the illnesses brought about by viral infection are ear infections, bronchitis, pneumonia, and acute sinusitis.

Having these symptoms — that starts with a viral fever — does not necessarily mean that you have a viral infection. These are just possible signs. Even doctors do not know how to differentiate a bacterial and a viral infection. The only way to tell is to undergo laboratory tests. [8]

## **2. Diarrhea:**

Diarrhea, also spelled diarrhoea, is the condition of having three or more loose or liquid bowel movements per day. It is a common cause of death in developing countries and the second most common cause of infant deaths worldwide. The loss of fluids through diarrhea can cause dehydration and electrolyte imbalances. In 2009 diarrhea was estimated to have caused 1.1 million deaths in people aged 5 and over and 1.5 million deaths in children under the age of 5. Oral rehydration salts and zinc tablets are the treatment of choice and have been estimated to have saved 50 million children in the past 25 years

Secretory diarrhea means that there is an increase in the active secretion, or there is an inhibition of absorption. There is little to no structural damage. The most common cause of this type of diarrhea is a cholera toxin that stimulates the secretion of anions, especially chloride ions. Therefore, to maintain a charge balance in the lumen, sodium is

carried with it, along with water. In this type of diarrhea intestinal fluid secretion is isotonic with plasma even during fasting. It continues even when there is no oral food intake.

Osmotic diarrhea occurs when too much water is drawn into the bowels. This can be the result of maldigestion (e.g., pancreatic disease or Coeliac disease), in which the nutrients are left in the lumen to pull in water. Osmotic diarrhea can also be caused by osmotic laxatives (which work to alleviate constipation by drawing water into the bowels). In healthy individuals, too much magnesium or vitamin C or undigested lactose can produce osmotic diarrhea and distention of the bowel. A person who has lactose intolerance can have difficulty absorbing lactose after an extraordinarily high intake of dairy products. In persons who have fructose malabsorption, excess fructose intake can also cause diarrhea. High-fructose foods that also have a high glucose content are more absorbable and less likely to cause diarrhea. Sugar alcohols such as sorbitol (often found in sugar-free foods) are difficult for the body to absorb and, in large amounts, may lead to osmotic diarrhea. Osmotic diarrhea stops when offending agent (e.g. milk, sorbitol) is stopped.

Exudative diarrhea occurs with the presence of blood and pus in the stool. This occurs with inflammatory bowel diseases, such as Crohn's disease or ulcerative colitis, and other severe infections such as *E. coli* or other forms of food poisoning.

Motility-related diarrhea is caused by the rapid movement of food through the intestines (hypermotility). If the food moves too quickly through the gastrointestinal tract, there is not enough time for sufficient nutrients and water to be absorbed. This can be due to a vagotomy or diabetic neuropathy, or a complication of menstruation. Hyperthyroidism can produce hypermotility and lead to pseudodiarrhea and occasionally real diarrhea. Diarrhea can be treated with antimotility agents. Hypermotility can be observed in people who have had portions of their bowel removed, allowing less total time for absorption of nutrients.

Inflammatory diarrhea occurs when there is damage to the mucosal lining or brush border, which leads to a passive loss of protein-rich fluids, and a decreased ability to absorb these lost fluids. Features of all three of the other types of diarrhea can be found in this type of diarrhea. It can be caused by bacterial infections, viral infections, parasitic

diseases, including muscular dystrophy and inflammatory myopathy. It occurs in neuromuscular junction disorders, such as myasthenia gravis.

Weakness describes a number of symptoms, including: loss of muscle strength, malaise, dizziness or fatigue. The term can be divided into two other more specific states, true weakness and perceived weakness.

True weakness (or neuromuscular) describes a condition where the force exerted by the muscles is less than would be expected, for example muscular dystrophy.

Perceived weakness (or non-neuromuscular) describes a condition where a person feels more effort than normal is required to exert a given amount of force but actual muscle strength is normal, for example chronic fatigue syndrome.

In some conditions, such as myasthenia gravis muscle strength is normal when resting, but true weakness occurs after the muscle has been subjected to exercise. This is also true for some cases of CFS, where objective post-exertion muscle weakness with delayed recovery time has been measured and is a feature of some of the published definitions.

Asthenia is a medical term referring to a condition in which the body lacks or has lost strength either as a whole or in any of its parts. It denotes symptoms of physical weakness and loss of strength. General asthenia occurs in many chronic wasting diseases (such as anemia and cancer), sleep disorders or chronic disorders of the heart, lungs or kidneys, and is probably most marked in diseases of the adrenal gland. Asthenia may be limited to certain organs or systems of organs, as in asthenopia, characterized by ready fatigability. Asthenia is also a side effect of some medications and treatments, such as Ritonavir (a protease inhibitor used in HIV treatment), vaccines such as the HPV vaccine Gardasil and fentanyl patches (an opioid used to treat pain).

Differentiating between psychogenic (perceived) asthenia and true asthenia with muscular weakness is often difficult, and in time apparent psychogenic asthenia accompanying many chronic disorders is seen to progress into a primary weakness. [11]

## **5. Skin diseases**

Skin diseases and disorders are very common health problems and virtually every person will have some type of skin disease or disorder at some point of life. This website



will help you diagnose and treat most common skin disease and disorders. But remember to consult your doctor before taking any actions.

There are numerous types of skin diseases and disorders, some of them are pretty harmless and will one cause only an itch or unpleasant visual appeal, some are rare and pretty serious and may cause organs malfunction or even death. Therefore take any potential symptoms seriously and take a good care of your skin

#### The most common types of skin diseases and disorders

Acne

Dermatitis

Herpes

Psoriasis

Rosacea

Skin Cancer

Warts

Our skin is truly amazing organ, so essential yet so often neglected. Its main function is to protect our internal organs against external environment. Skin weighs about four kilograms and covers an area of two square meters. It consists of three layers:

- Epidermis – the most superficial layer of skin. It has no direct blood supply, therefore dermis nourishes it via diffusion. It contains four cell types: Merkel cells, Langerhans cells, melanocytes and keratinocytes (they are the major component, almost 95% of consists from these cells). Cell division enables self-regeneration of epidermis, it takes four weeks for differentiating cells to move from stratum basale, through stratum spinosum to the stratum corneum, where cells are constantly shed from the surface.
- Dermis – layer of skin between epidermis and subcutaneous tissue. It is composed from collagen, elastic fibers and extracellular matrix. Dermis contains superficial and deep plexus vascular networks. They are connected by vertical communicating vessels and their function is to regulate temperature, supply nutrition, modulate inflammation and help out with wound healing.

- Subcutaneous tissue – layer of fat between the dermis and fascia. It has two components: actual fatty layer and deeper vestigial layer of muscle. Adipocyte (fat cell) is the main cellular component of subcutaneous tissue. The main function of this skin layer is to absorb trauma, insulate the body and serve as a reserve energy source.

The spectrum of skin diseases and disorders, also known as dermatoses is immensely broad. There are thousands of skin conditions, however only few of them account for the most visits to the physicians. Classification of these conditions is very challenging. Most textbooks present a classification based on location, morphology, etiology etc.

While this website will provide detailed description of common skin diseases and disorders, their symptoms, types and treatments, it is important to note that before taking any action, you should always talk to your doctor first. [12]

### **Pictorial Presentation of Upazila Health Complex**







# CHAPTER 2

**Research Objective:**

1. To identify the drug uses pattern of upazila health complex in Bangladesh
2. To examine the irrational prescribing of drug by doctors
3. To examine the common health problem of people at upazila level.
4. To identify the dispensed drug that is obtained from Government drug industry (Drug Essential).
5. identification of patient get all drugs from Government free dispensing area that are prescribed by the doctors
6. To examine the patient getting enough time to fully tell the doctors about their ailment.
7. The number of drugs are given to the patients against a diseases that is examine the polypharmacy
8. On the basis of information and its analysis, the study will suggest corrective implementation of rational use of drug.

**Prescribing & Dispensing Behavior:**

The prescribing and dispensing behavior are determined by following factors

1. Influence of pharmaceutical company : The private sector especially private pharmaceutical companies are competing for drug supply and sales of their drugs. Most of the time they try to influence doctors and sometimes patients.

2. Constrains with public health system: The problem associated with procurement system and financing the drug supply and availability of essential drugs, the application of essential drug list, reliable assay method for quantification of drug needs.

3. Problems in belief & attitude: The problems associated with the knowledge and practice of prescribing by the health care professional. This causes inappropriate prescribing as follows-

- Polypharmacy
- Overuse of antibiotics
- Indiscriminate use of injections
- Use of antibiotics for minor treatment
- Minerals and tonics for malnutrition

4. Lack of diagnostic center: Although a room is available for diagnostic center in the upazila health complexes, no operation is performed there. So the doctors prescribe drug without any diagnosis.

**Study Design:**

The study was divided into three main stages-

At the first stage, I try to select some upazila health complex. The selection was done randomly. The selection of upazila health complex was quite difficult because there are more than 460 upazila health complexes.

At the second stage, prospective data collected by observing doctor-patient and patient-dispenser interaction.

At the third stage, data collected by depth interviews that were taken from patients.

**The Selected Upazila Health complexes:**

1. Sonargao Upazila Health complex
2. Gojaria Upazila Health complex
3. Dhamrai Upazila Health complex

**Core Drug Use Indicators:**

There are three drug use indicators were applied to assess the drug use pattern in upazila health complexes-

1. Prescribing indicators:

- Average number of drugs per encounter
- % of encounters with antibiotic prescribed
- % of drug prescribed that have to buy from outside
- % of laboratory test prescribed by doctor

2. Patient care indicators:

- Average consulting time
- Average dispensing time
- % of drugs actually dispensed
- % of drug adequately labeled

### 3. Health facility indicators:

Availability of copy of essential drug list

Availability of key drugs

Availability of health care personnel

Availability of diagnostic center

### Data Collection Procedure:

First of all upazila health complexes are selected for our study. It was based on random selection. So for the research purpose I select three upazila health complexes which are located around Dhaka city. After selecting these complexes, it was necessary to prepare a permission letter to work in those health complexes signed by my instructor. The Sonargaon health complex observation was started at the middle time of the clinical day because that time the flow of patient is the highest. The clinical time for a health complex is from 8:30AM to 2PM daily. The outdoor remain closed only in Government holiday but the emergency remains opened all the day of week. Then I meet with the chief person of upazila health complex for get permission. Then prospective data collected by observing doctor-patient and patient-dispenser interaction. The procedure was recorded at the beginning and ending times for individual consultation. A similar procedure was used in the dispensing area where the beginning and ending times of the patient interactions with the dispenser was recorded. Then a brief interview was taken from patients. It was evaluated, based on the patient knowledge about when and in what quantity each drug should take. It was monitored the number of drugs received by patient from the dispensing store of the health complex and also point out the drugs that was collected from outside. The name, age, sex, prescribes name are also stored in the encounter forms. One encounter forms are used for every patient. In this way the other health complexes observation, patient interview, data monitoring etc was performed.





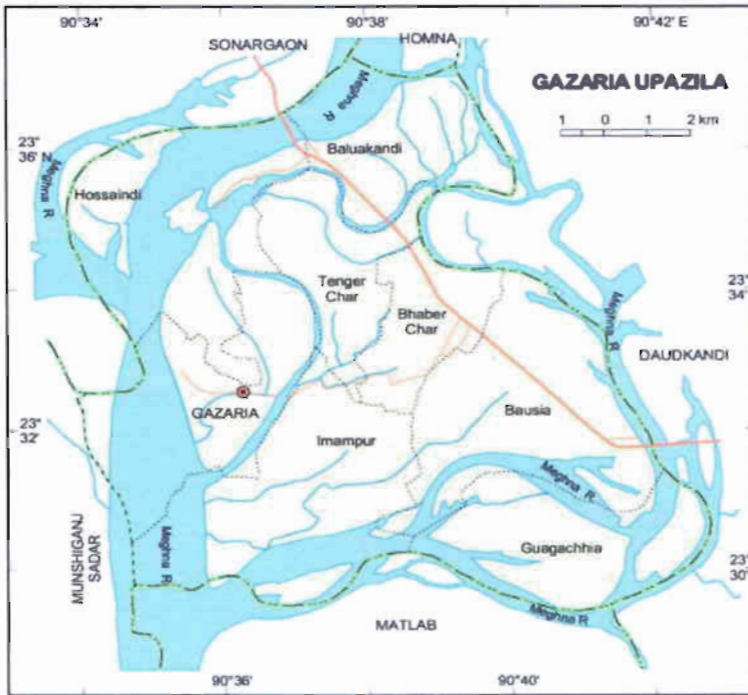


Fig 1: Map of Gazaria upazila[14]

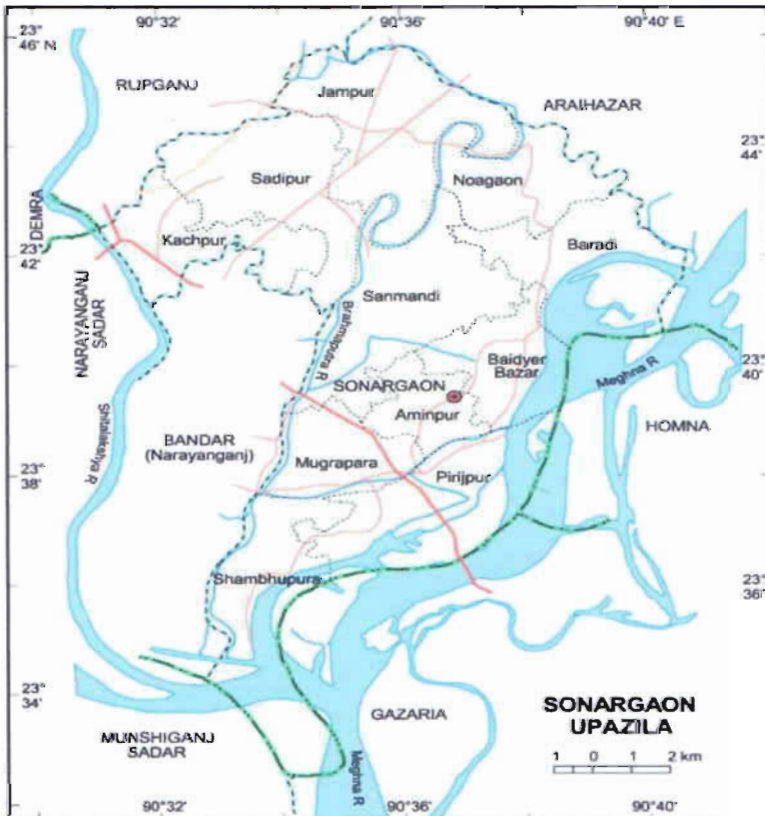


Fig 2: Map of Sonargaon upazila[13]



Fig 3: Map of Dhamrai upazila

# CHAPTER 3

## Result & Data Analysis:

### Data Analysis:

The data on prescribing indicators, patient care indicators and facility indicators were calculated. The summarized data were then analyzed by me to assess the quality of the each indicators. The prevailing condition in each indicator quality were compared with similar indicator studies performed previously on government health facilities. Such comparison has given us a clear understanding of whether the situation has improved or got worse.

The results from Sonargaon upazila health complex were companied with the result of other two health complexes. In the Sonargaon health complex, 38% of patients remaining the age range of 41 to 90. Only 1% patients remaining the age range of 26 to 40. In case of Gajaria health complex, 40% of patients remaining the age range of 41 to 90. Only 0% patients remaining the age range of 26 to 40. In case of Dhamrai health complex, 59% of patients remaining the age range of 41 to 90. only 3% patients remaining the age range of 15 to 25. In case of combination of three health complexes, 42% of patients remaining the age range of 41 to 90. Only 3% patients remaining the age range of 26 to 40.

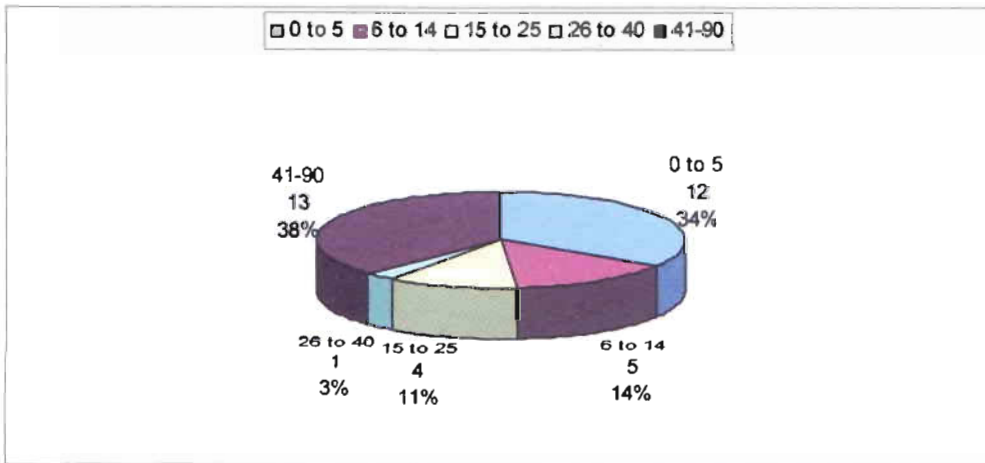


Fig 3: % of patients at different age obtained from Sonargaon health complex



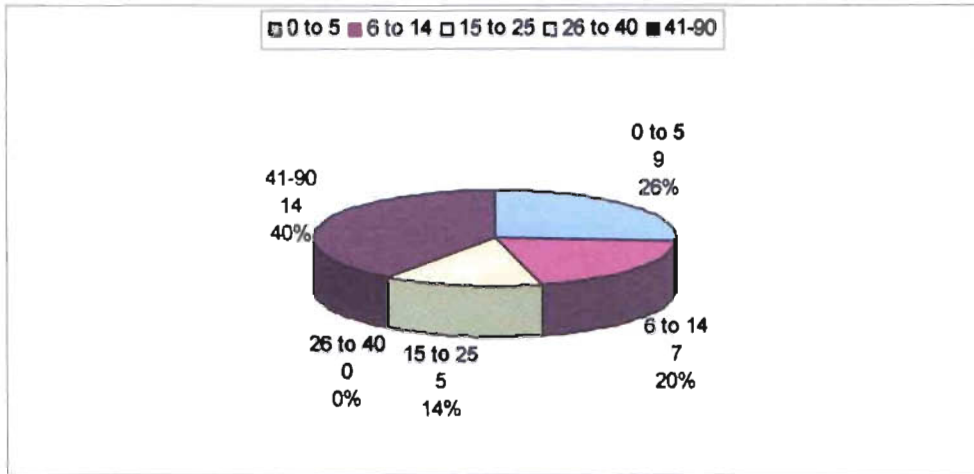


Fig 4: % of patients at different age obtained from Gajaria health complex

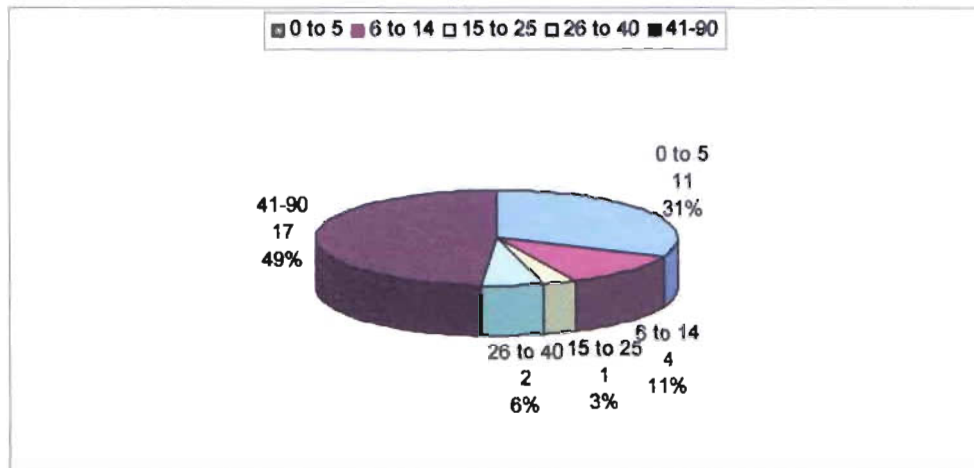


Fig 5: % of patients at different age obtained from Dhamrai health complex

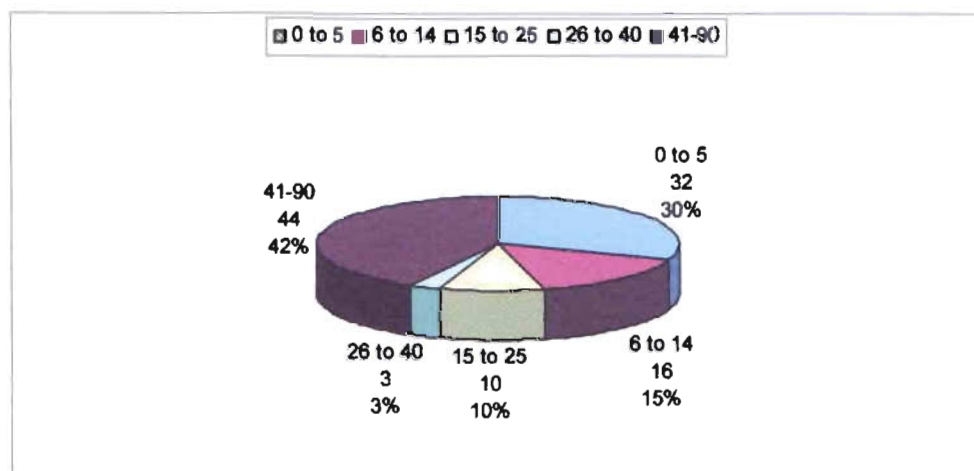


Fig 6: % of patients at different age obtained from three health complex

Another indicator is the % of drug buy from outside. In Sonargaon health complex, patients got 95% of drug from Governmental store and 5% of drug is bought from the outside. In Gajaria health complex, patients got 76% of drug from Governmental store and 24% of drug is bought from the outside. In Dhamrai health complex, patients got 91% of drug from Governmental store and 9% of drug is bought from the outside. So if we combine the health complexes, patients got 87% of drug from Governmental store and 13% of drug is taken from the outside.

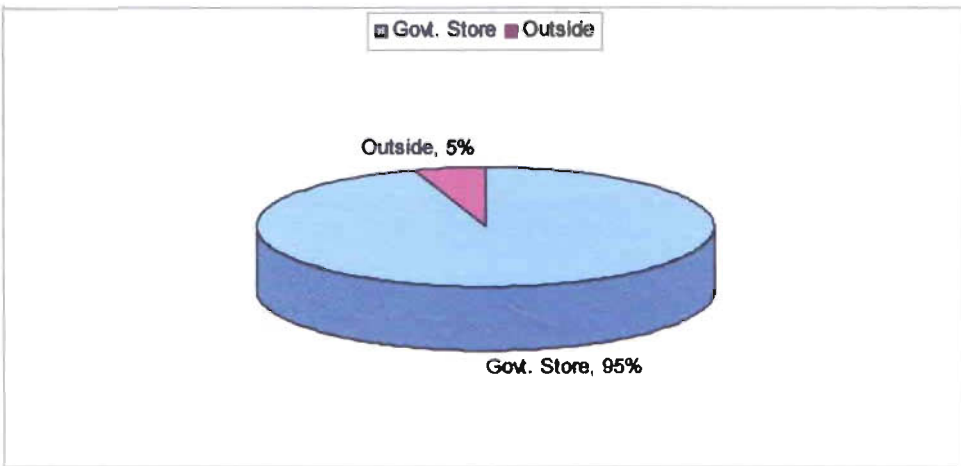
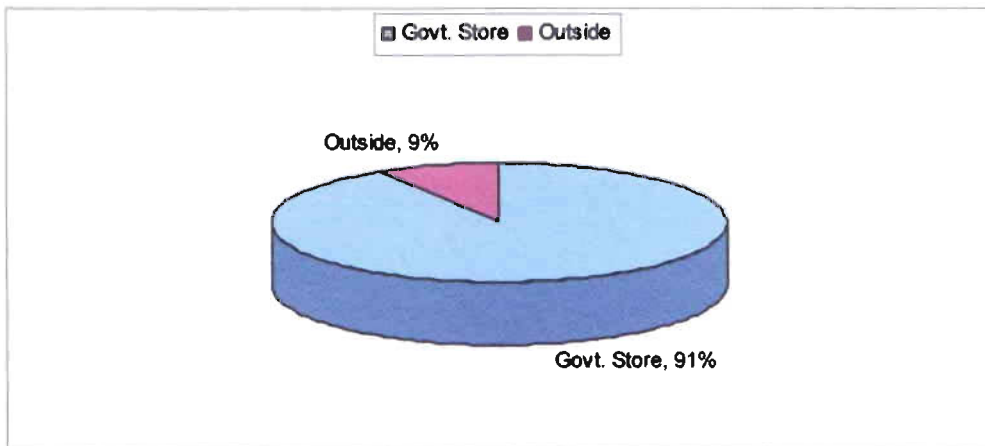


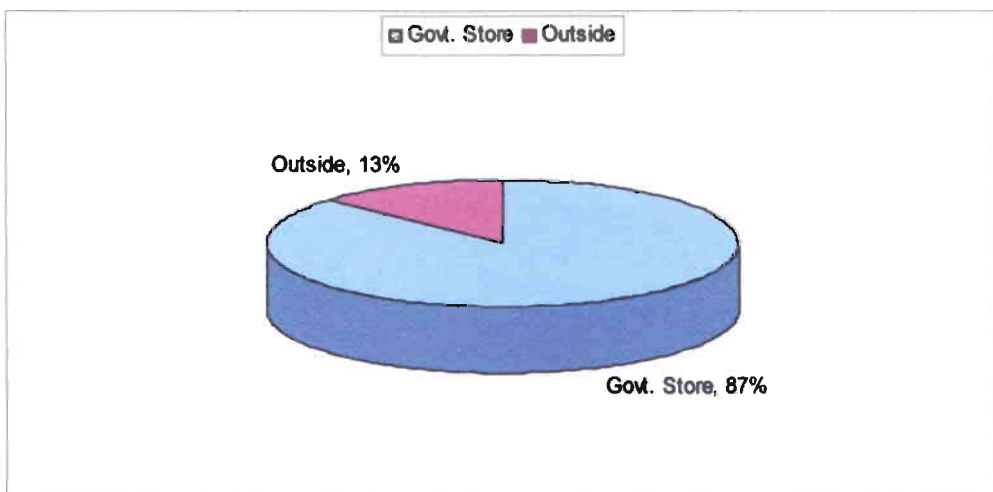
Fig 7: % of drug buy from outside obtain from Sonargaon



Fig 8: % of drug buy from outside obtain from Gajaria



**Fig 9: % of drug buy from outside obtain from Dhamrai**



**Fig 10: % of drug buy from outside obtain from three health complex**

The another indicator is consider the consulting time. The average consulting time for Sonargaon was 2.96 but the average consulting time for Gajaria was 2.75 and the average consulting time for Dhamrai 2.83. Finally the average consulting time three health complexes was 2.85

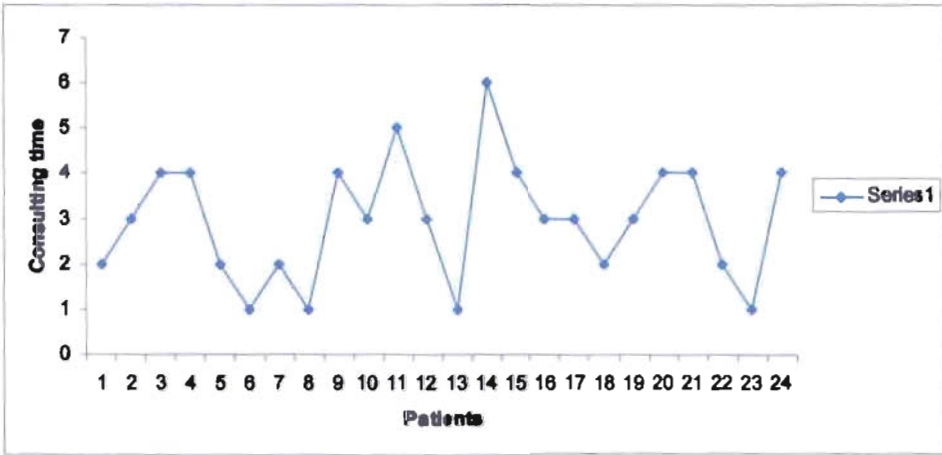


Fig 11: Consulting times for Sonargaon

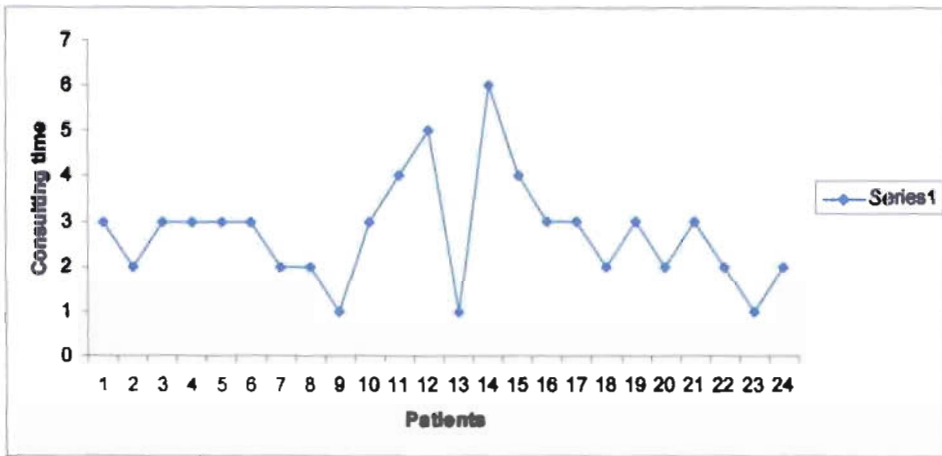


Fig 12: Consulting times for Gajaria

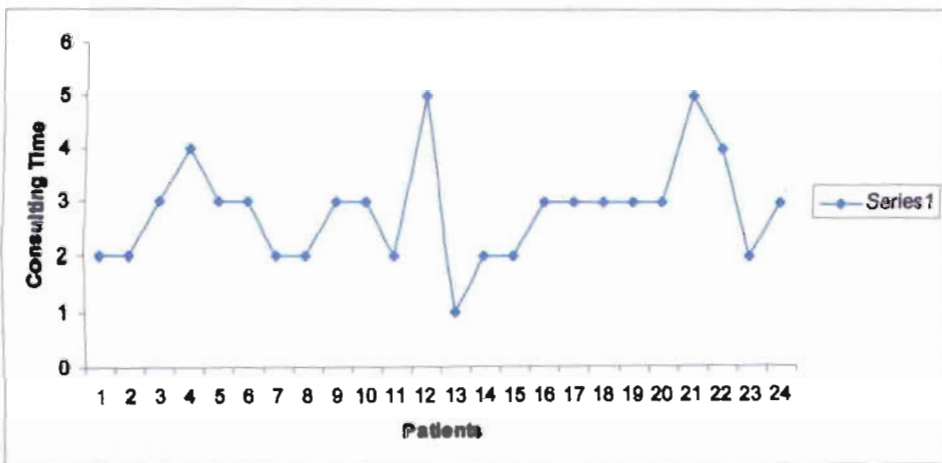


Fig 13: Consulting times for Dhamrai



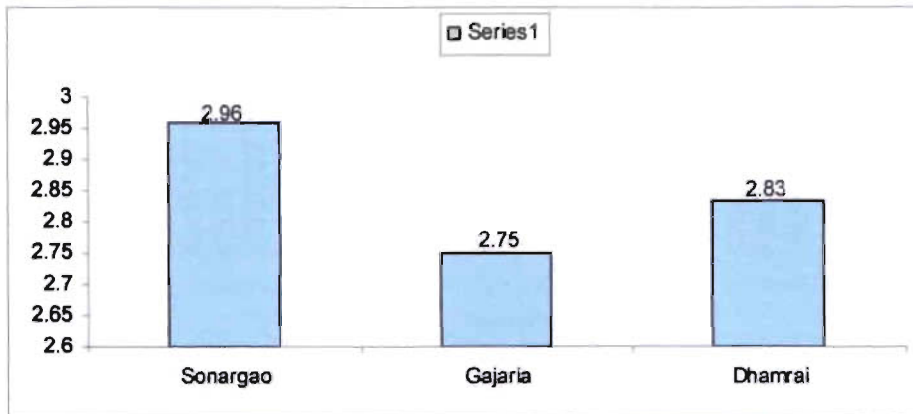


Fig 14: Average consulting time for Sonargaon, Gajaria & Dhamrai

The another indicator is consider the dispensing time. The average dispensing time for Sonargaon was 1.54 but the average dispensing time for Gajaria was 1.75 and the average dispensing time for Dhamrai 2.04. Finally the average dispensing time three health complexes was 1.78

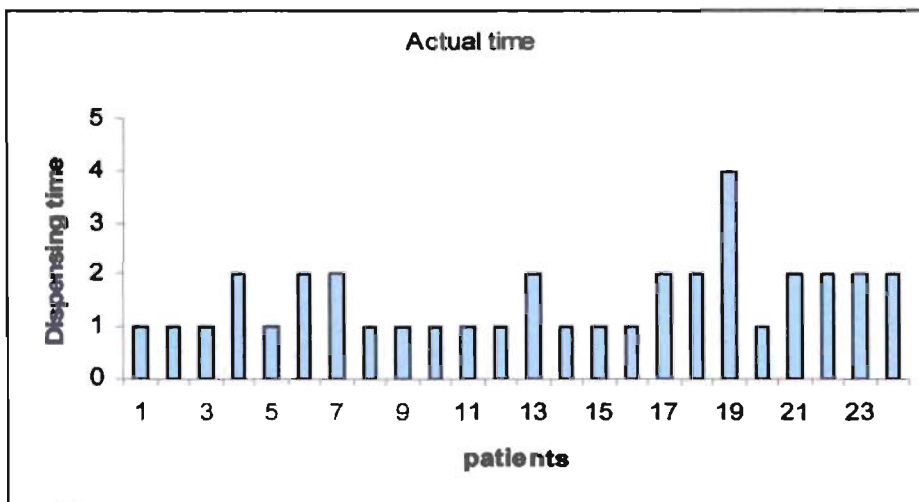


Fig 15: Dispensing times for Sonargaon

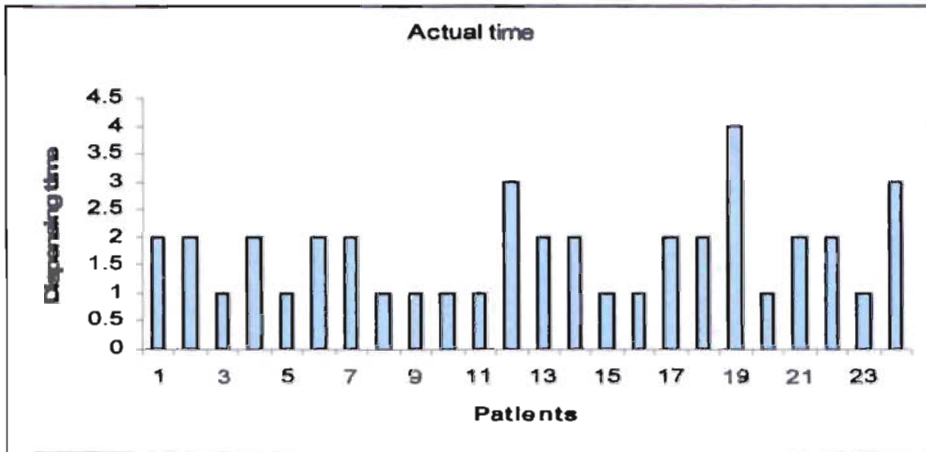


Fig 16: Dispensing times for Gajaria

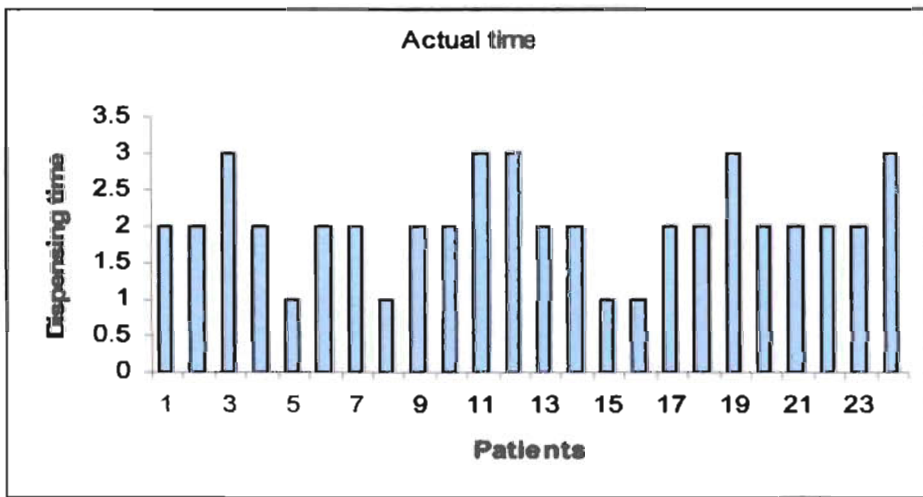


Fig 17: Dispensing times for Dhamrai

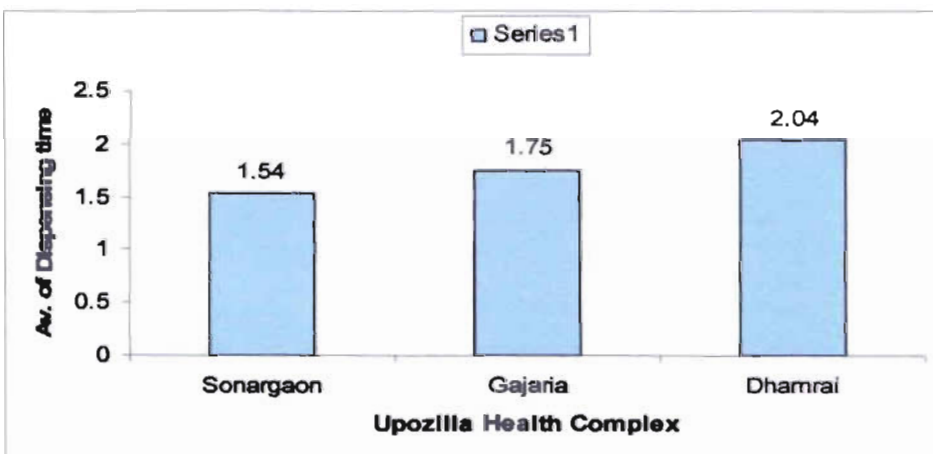


Fig 18: Average dispensing time for Sonargaon, Gajaria & Dhamrai

The gender of patients is used as another indicator. Among the patients of Sonargaon there are 13 were male and 22 were female. But among the patients of Gajaria there are 16 were male and 19 were female and among the patients of Dhamrai there are 9 were male and 26 were female. So among the patients of three health complexes there are 38 were male and 67 were female.

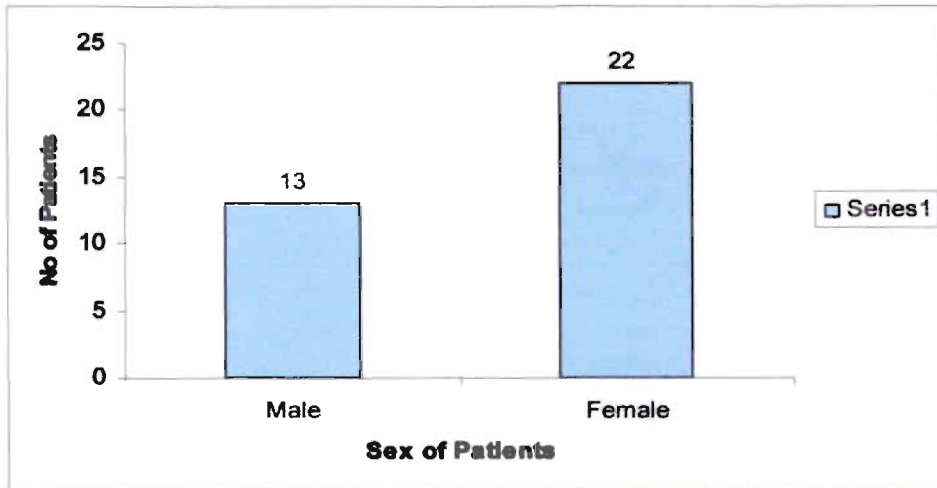


Fig 19: Sex of patients for Sonargaon

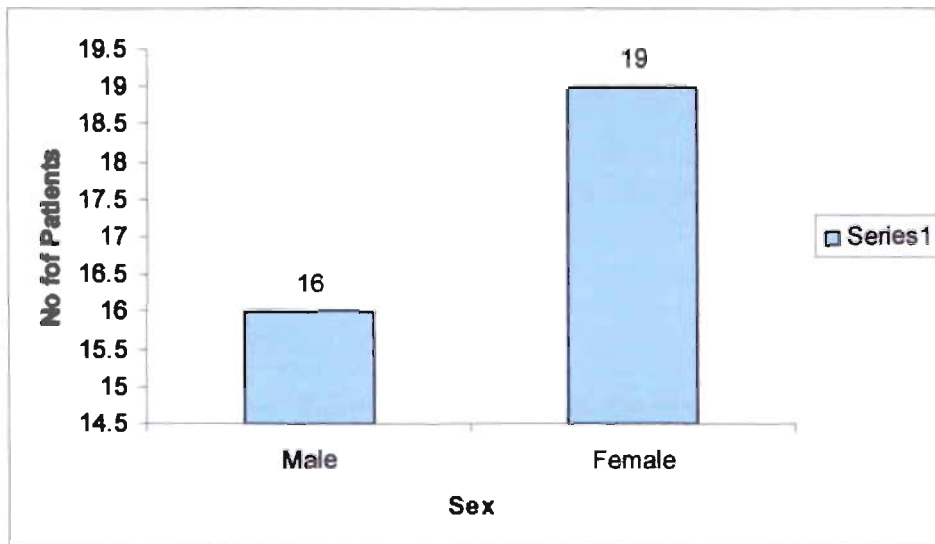


Fig 20: Sex of patients for Gajaria

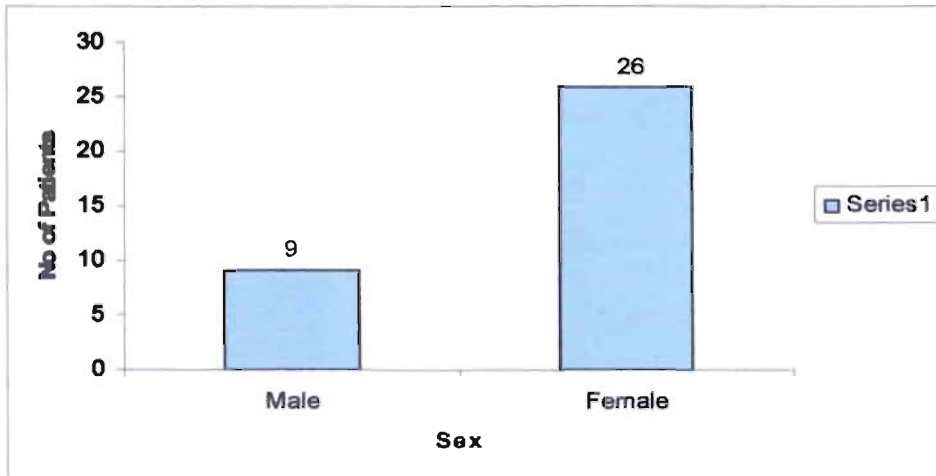


Fig 21: Sex of patients for Dhamrai

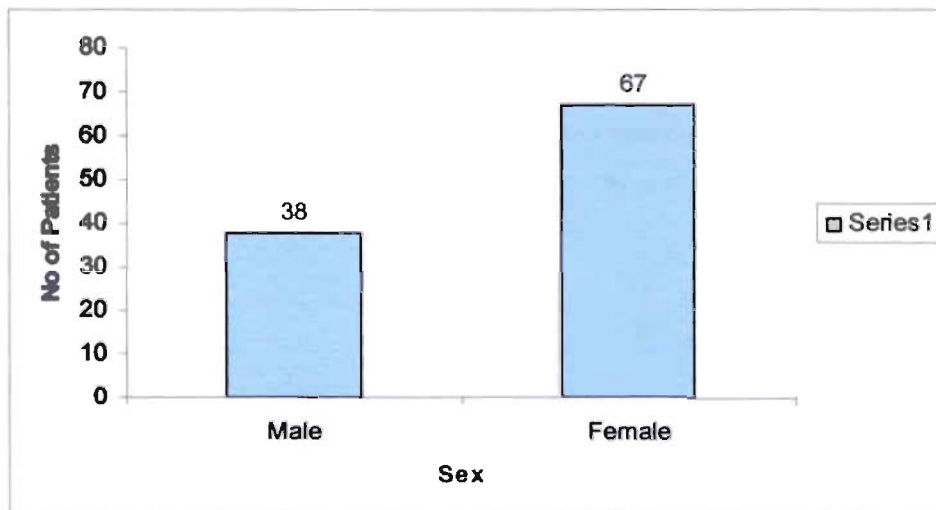


Fig 22: Sex of patients for Sonargaon, Gajaria & Dhamrai

The average number of drug in a prescription for Sonargaon was 2.77 where the average number of drug in a prescription for Gajaria was 3.03 and the average number of drug in a prescription for Dhamrai was 3.17

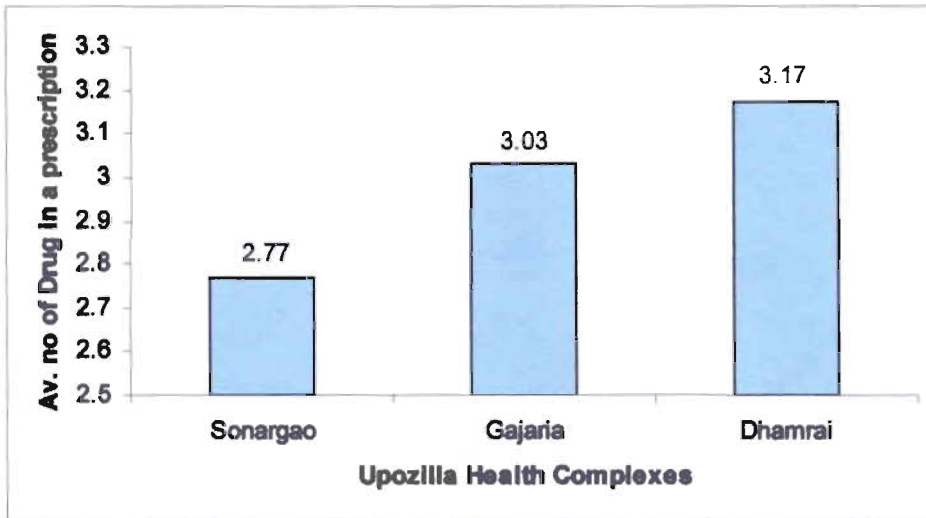


Fig 23: Average number of drug in a prescription

The different types of diseases is another factor for analysis. In case of Sonargaon, Gajaria and Dhamrai fever remain at top position from the total number of patients. And weakness remain at least position from the total number of patients.

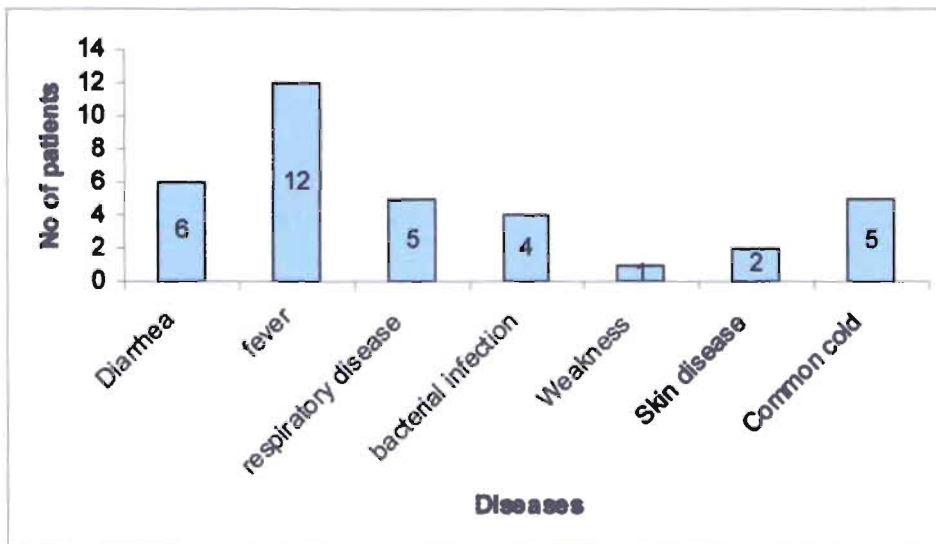


Fig 24: Different types of diseases for Sonargaon

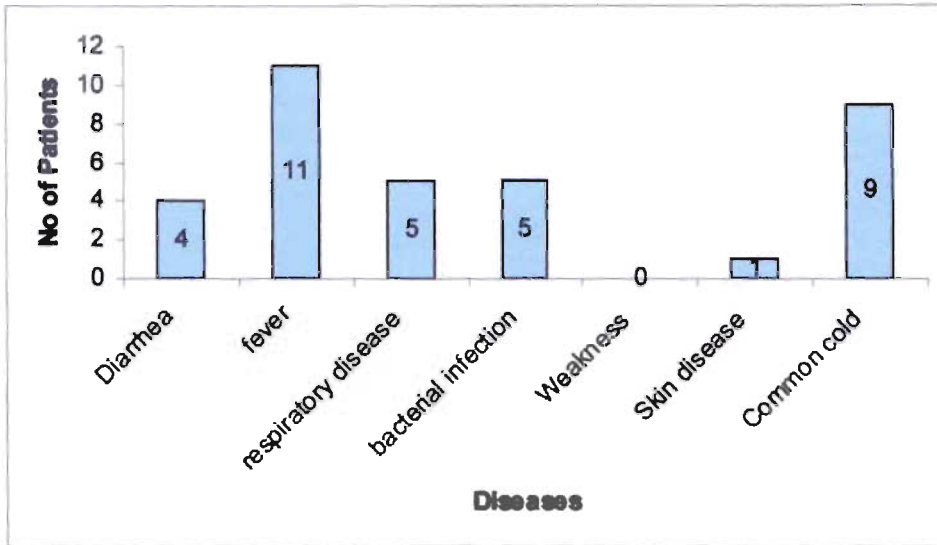


Fig 25: Different types of diseases for Gajaria

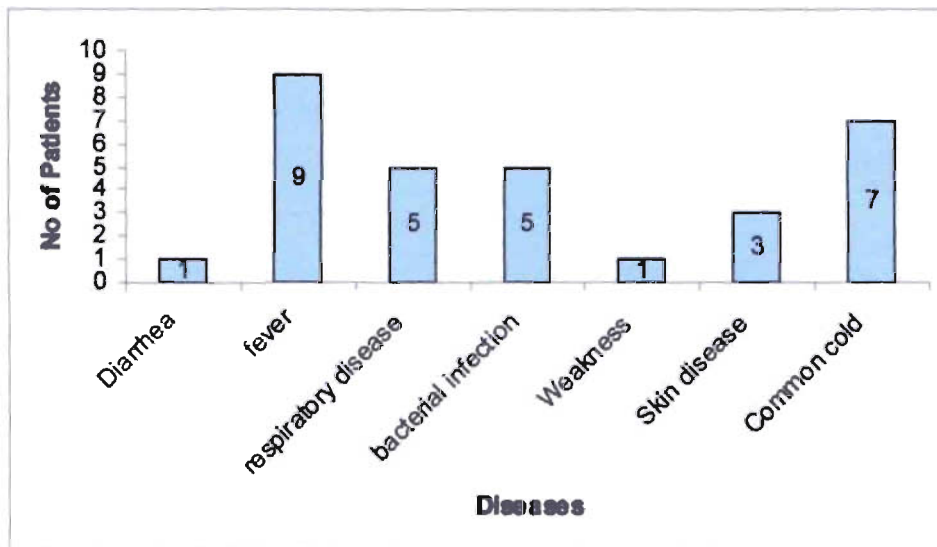


Fig 26: Different types of diseases for Dhamrai

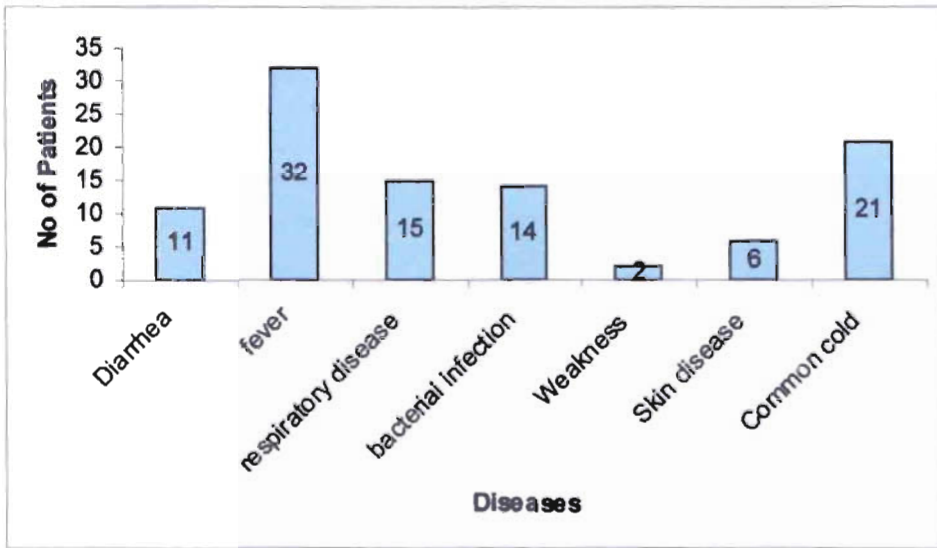


Fig 27: Different types of diseases for Sonargaon, Gajaria & Dhamrai

The percentage of governmental & non-governmental drug is the main consideration for irrational use of drug. In case of Sonargaon the governmental drug were prescribed 67% and non-governmental drug were prescribed 24% where in case of Gajaria the governmental drug were prescribed 56% and non-governmental drug were prescribed 44% and in case of Dhamrai the governmental drug were prescribed 71% and non-governmental drug were prescribed 29%.

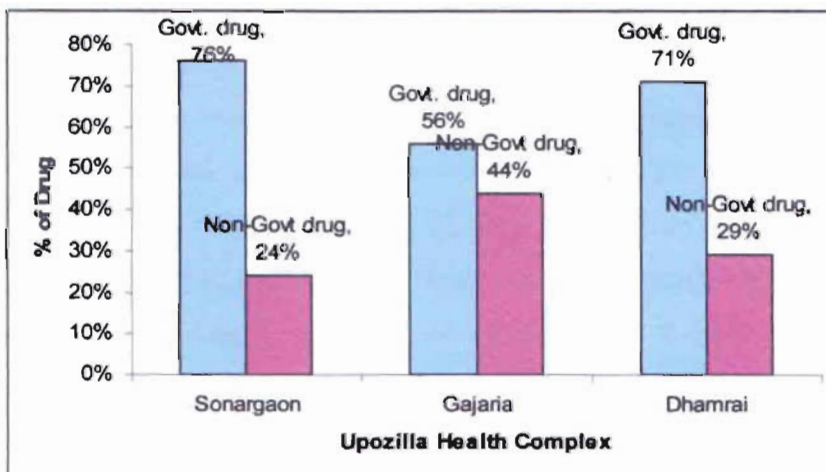


Fig 28: % of Governmental & Non-governmental drug

The percentage of encounters with antibiotics prescribed is another factor for considering. In case of Sonargaon, 32% of prescription contain antibiotics where in case

of Gajaria, 50% of prescription contain antibiotics and in case of Dhamrai, 38% of prescription contain antibiotics.

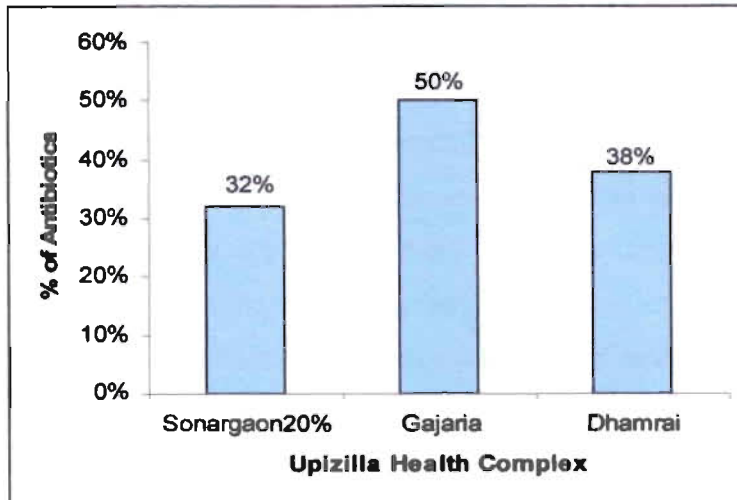


Fig 29: % of encounters with antibiotics prescribed

### Discussion:

The number of drugs per counter indicates the **pattern** of polypharmacy. Polypharmacy means many drugs and refers to problems that can occur when a patient is taking **major** medications that are actually needed. It is a particular concern for older patients, who **make up 42%** of the **population**. Some people have no problem at all, but others suffers because of the polypharmacy. In these there health complexes the average number of drug was 2.99%. But the ideal figure should be one for one condition. The result is more or less satisfactory in comparison to the result of other countries. But we can reduce the irrational drug use and also we can improve the result by avoiding unnecessary drug from the prescription. As for example, a 65 years old patients do not need 2 medicines (allatrol & paracetamol) only for normal cold. Here we can see that two anti-ulcer drug is given which is of **same** action. Paracetamol and diclofenac **have** same activity. This indicates the **irrational** use of drugs.

The vitamin B complex can be easily obtained from vegetables and fruits. Vitamin B complex can be avoided in this case. Excess use of vitamins leads to



hypervitaminogenesis which have the symptom of vitamin deficiency. In many prescription I have seen that the doctors prescribed vitamin in case of malnutrition, simple cold. So by avoid this it is possible to maintain rational use of drugs.

Antibiotic is one of the important factors for considering the irrational use of drugs. It is commonly used in Bangladesh due to its high susceptibility against infectious diseases. My next concern was to study percentage of encounter with antibiotics. The result was 41% of total case. In our country the use of incorrect antibiotics is creating a serious problem like resistance. As a result many infectious diseases are not properly cured or the diseases can not be treated by any drug. The high rate of antibiotics resistance in this country appear to be due to a combination of heavy burden of bacterial infectious disease. For example only for normal fever it is not a good practice to give an antibiotic course. If it is prescribed the doctor should have given advice to the patients so that they complete the full course. So irrational use of drug can be avoided in this way.

Essential medications are those that satisfy the major health care needs of the population. They are selected with due regard to public health relevance, evidence on efficiency and safety, and comparative cost effectiveness. Essential medicines are intended to be available with in the context of functioning health systems at all times in adequate amount. In the upazila health complexes it is a system that every drug should provided from the governmental drug house. These drugs are supplied from govt. pharmaceutical company "Essential Drug Limited". But I was observed that 13% of drug had to buy from outside by the patient because of the unavailability of drug in the store house. This is irrational. Government must be provided all drugs to the patient according to their need.

Another most important factors for irrational use of drugs is presence of governmental and non-governmental drugs in the drug store house. In case of Sonargaon the governmental drug were prescribed 67% and non-governmental drug were prescribed 24% where in case of Gajaria the governmental drug were prescribed 56% and non-governmental drug were prescribed 44% and in case of Dhamrai the governmental drug were prescribed 71% and non-governmental drug were prescribed 29%. This is irrational.

Because it is a rule that, the doctors of upazila health complexes must be prescribed the governmental drugs. I found a reason for prescribing the non-governmental drugs. Due to the promotional strategy of the pharmaceutical company, they try to satisfy the doctors at any cost. So the doctors have the tendency to prescribe non-governmental drugs which is irrational. So the doctors have to be away from the influence of marketing promotion officers.

The different types of diseases is another factor for analysis. In case of Sonargaon, Gajaria and Dhamrai fever remain at top position from the total number of patients. And weakness remain at least position from the total number of patients. From the analysis I had found that diarrhea, fever, respiratory diseases, bacterial infection, skin diseases, and cold were common problem in upazila health complexes. I observed that there is a space for diagnosis. But no diagnostic operation occurs in these rooms. But this is necessary to ensure the rational use of drug. If diagnosis is properly done, doctors can be prescribed rational drugs.

Another important factor for considering the rational use of drug is the consulting and dispensing time. The consulting time should be appropriate so that the patients get enough time for telling the problem of him or her. And for that doctors should give enough time to the patient. Doctor may ask question about the problem of patients and must maintain consistency about patient's information. This can avoid the irrational use of drug. The dispensing time also be appropriate. The pharmacist in the dispenser should make clear the information of drug to the patients. In this study I got the average dispensing time for three health complexes was 1.78 and the average consulting time for three health complexes was 2.85. For ensuring rational use of drug the consulting and dispensing time should be much more.



# CHAPTER 4

**Conclusion:**

Drug use is the end of the therapeutic consultation. For ensuring that the correct drug is given to the correct patient is a high priority for all health professional. Health planners and prescribes need to be careful about irrational use of drugs and improve the quality of care provided to their patients.

From this study I identified some serious problems in health complex

- Drugs are prescribed unnecessary and irrationally where no drug therapy is required.
- Very short consultation and dispensing times provided
- Very inadequate clinical interaction and little patient care
- A high proportion of primary care patients in the upazila health complexes are receiving antibiotics for acute respiratory infection, scabies, diarrhea, dysentery.
- Labeling and dispensing of drug is virtually absent in most of the health complexes
- Inadequate drug supply seriously hampers prescribing and patient care

**Recommendations:**

The following recommendations are made towards the improvement of the utilization and rational prescribing of drugs at this primary health care level

- Standard treatment protocol for common diseases such as diarrhea, dysentery, cold problem, respiratory tract infection, skin diseases etc be developed.
- Refresher training course should be provided in the most common illness and therapy.
- Short course in rational prescribing, in particular for the use of antibiotics, NSAID and antidiarrheal should be organized for the prescribes.
- In particular, studies need to be conducted to investigate the drug use pattern in the medical colleges and teaching hospitals, where medical students learn and practice prescribing.
- Irrational prescribing is difficult to cure but prevention is possible. This can be avoided by short problem based training course and workshops.

- Regulatory methods are related to government policy or law. These include banning and harmful drugs, limiting the number of drugs available to lower level of health facilities and limiting the number of drugs
- Managerial methods should relate to health system administration. These include altering prescribing and dispensing patterns by encouraging the standard prescription forms, limiting drug availability.
- Public health care campaigns should be introduced to address the use and misuse of drugs.



Fig 30: A cheer able child with his mother

**Limitation:**

Data collection from upazila health complex was found to be difficult task to perform-

- The principle limitation of this study that there was no information regarding the patient's diagnosis in the prescription.
- Another limitation was doctors tried to change their prescribing behaviors because they were careful in their prescribing after they knew about me.
- For this research work I collect prescriptions of three upazila health complexes. This might be small number for analysis. But to avoid this problem as possible I collects large number of prescription in each health complex.

**References:**

1. Walker GJA, Hogerzeil HV, Sallami AAS, Fernando G and Kassem FA: Evaluation of rational drug prescribing in democratic Yemen. *Soc. Sci. Med.* 31, 823, 1990
2. Laing RO, Rational drug use; An unsolved problem. *Trop. Doct.* 8, 101, 1990
3. A manual on how to investigate drug use in health facilities (selected drug use indicators); World Health Organization, Geneva 1995
4. Plumridge RJ. Intervention Strategies Aimed at Modifying Prescribing Behaviour; *Aust. J. Hosp. Pharm.*; 14, 93, 1984
5. National drug policy, 1982,
6. Secondary and Tertiary Health Care Facilities in Bangladesh, 2010, Date Retrieved-19<sup>th</sup> November, 2011, Available from website:  
[http://nasmis.dghs.gov.bd/dghs\\_new/dmdocuments/All/Secondary%20and%20Tertiary%20Care%20Facilities.pdf](http://nasmis.dghs.gov.bd/dghs_new/dmdocuments/All/Secondary%20and%20Tertiary%20Care%20Facilities.pdf)
7. Boston University, school of public health, Date Retrieved-19<sup>th</sup> November, 2011, Available from website  
: [archives.who.int/prduc2004/rducd/Visual\\_Aids/3\\_ProblemsVA.ppt](http://archives.who.int/prduc2004/rducd/Visual_Aids/3_ProblemsVA.ppt)
8. Viral fever, 2010, Date Retrieved-19<sup>th</sup> November, 2011, Available from website:  
<http://viralfever.info>
9. Diarrhea, Wikimedia Foundation, Inc., 14 December 2011 at 07:36 Date Retrieved-19<sup>th</sup> November, 2011, Available from website <http://en.wikipedia.org/wiki/Diarrhea>
10. Respiratory disease, Wikimedia Foundation, Inc., 19 December 2011 at 08:49 Date Retrieved-19<sup>th</sup> November, 2011, Available from website: <http://en.wikipedia.org/wiki/11>
11. Weakness, Wikimedia Foundation, Inc., 14 December 2011 at 01:00, Date Retrieved-19<sup>th</sup> November, 2011, Available from website: <http://en.wikipedia.org/wiki/Weakness>
12. Skin Diseases and Disorders Overview, 2007, Date Retrieved-19<sup>th</sup> November, 2011, Available from website: <http://skindiseasesanddisorders.org>.
13. Image of Sonargaon, Date Retrieved-19<sup>th</sup> November, 2011, Available from website:  
<http://www.google.com/imgres?q=sonargaon+map&hl=en&client=firefox-a&hs=Xsd&rls=org.mozilla>

14. Image of Gajaria, Date Retrived-19<sup>th</sup> November, 2011, Available from website:  
<http://www.google.com/imgres?q=sonargaon+upazila+map&hl=en&client=firefox-a&hs=nFJ&rls=org.mozilla:>



# ANNEX









**DETAILED INDICATORS ENCOUNTER FORM**

Location:

Investigator

Date:

ID	Date	Name	Age	Sex	Prescriber
Health problems		Health problem description			
Drugs (name and strength)	Dosage schedule		Quantity		

**PATIENT EXIT INTERVIEW/DETAILED ENCOUNTER FORM**

Location:  
Investigator

Date:

<b>Health problem diagnosed</b>	<b>Health problem described to the doctor by the patient</b>	<b>ID no:</b> <b>Age:</b> <b>Sex:</b> <b>Name:</b> <b>Prescriber:</b>

Drug name prescribed	Company	Generic	Strength	Dosage form	Qty. Prescribed	Qty. Dispensed	Label(0/1)	Patients knowledge of dosage

Qty=Quantity

- Laboratory test: Yes/no  
If yes, then specify.....
- Did you get the chance to fully tell the doctor about your ailment? Yes/no
- Did the doctor examine you/your child? Yes/no
- Did the pharmacist explain to you how to take the drug? Yes/no
- Did the doctor tell you to meet him elsewhere? Yes/no
- Is this your first visit? Yes/no  
If no, then how long ago did you come?.....
- Did you consult anyone before coming here? Yes/no  
If yes, then specify the person.....
- Did the doctor give any drug(s) that you have to buy from outside? Yes/no  
If yes, then drug(s) name.....

**Upozilla Health complexes of Dhaka Division:**

Districts	Postal code	Thanas	Serial No
Sariatpur	220	Goshaipur	1
	221	Damuddya	2
	222	Palong	3
	223	Bhederganj	4
	224	Naria	5
	225	Zazira	6
Madaripur	226	Sibehar	7
	227	Rajoir	8
	228	Madaripur	9
	229	Kalkini	10
Gopalganj	230	Kotoalipara	11
	231	Tongipara	12
	232	Gopalgonj	13
	233	Kassiani	14
	234	Muksudpur	15
Faridpur	335	Bhanga	16
	236	Shadapur	17
	237	Charbhadrason	18
			19
Rajbari	242	Modhukhali	22
	243	Baliakandi	23
	244	Pangsha	24
	245	Rajbari	25
	246	Goalandaghat	26
Manikganj	247	Harirampur	27
	248	Shabalaya	28
	249	Dawlarpur	29
	250	Ghior	30
	251	Manikganj	31
	252	Singiar	32
	253	Saturia	33
Dhaka	254	Dhamrail	34
	255	Savar	35
	256	Keraniganj	36
	257	Nawabganj	37
	258	Dohar	38
Munshiganj	259	Sreenagar	39
	260	Louhajang	40
	261	Serajdikhan	41
	262	Tongibari	42
	263	Munshiganj	43
	264	Gazaria	44

Narayaganj	265	Narayaganj	45
	266	Bandar	46
	267	Sonargaon	47
	268	Araihazar	48
	269	Rupganj	49
Narsingdi	270	Palash	50
	271	Narsingdi	51
	272	Raipur	52
	273	Belaboo	53
	274	Shibpur	54
	275	Manohardi	55
Gazipur	276	Kaliganj	57
	277	Gazipur	58
	278	Sripur	59
	279	Kaliakair	60
	280	Mirzapur	61
Tangail	281	Nagarpur	62
	282	Debduar	63
	283	Tangail	64
	284	Basail	65
	285	Sakhipur	66
	286	Kalihati	67
	287	Bhuapur	68
	288	Ghatail	69
Jamalpur	292	Jamalpur	74
	293	Madarganj	75
	294	Malandaha	76
	295	Islampur	77
	296	Dewanganj	78
	297	Bakshiganj	79
	298	Sribordi	80
Sherpur	299	Jhenaigati	81
	300	Sherpur	82
	301	Nakhla	83
	302	Nalitabari	84
	303	Haliaghat	85
Mymansing	304	Dhubaura	86
	305	Phulpur	87
	306	Gouripur	88
	307	Iswarganj	89
	308	Mymansing	90
	309	Muktagacha	91
	310	Phulbaria	92
	311	Bhaluka	93
	312	Gafargaon	94

	313	Trisal	95
	314	Nandail	96
	315	Hossenpur	97
Kishorganj	316	Kishorganj	98
	317	Pakundia	99
	318	Kotiadi	100
	319	Kuliarchar	101
	320	Bkairab	102
	321	Bjitpur	103
	322	Astagram	104
	323	Nikhili	105
	324	Mitamain	106
	325	Karimganj	107
	326	Tarail	108
	327	Itna	109
	328	Khaliapuir	110
Netrokona	329	Modon	111
	330	Kendua	112
	331	Atpara	113
	332	Mohanganj	114
	333	Barhatta	115
	334	Netrokona	116
	335	Purbodhala	117
	336	Durgapur	118
	337	Kalmakanda	119



## **Some Research Paper on Health Complexes:**

### **1. Provision of Primary Health Care in Bangladesh: An Institutional Analysis**

By Alia Ahmad August, 2003

Paper presented at the Conference on Development Research at Lund University, September 26, 2003

Available from website: [http://www.nek.lu.se/publications/workpap/Papers/WP03\\_18.pdf](http://www.nek.lu.se/publications/workpap/Papers/WP03_18.pdf)

### **2. HRH scenario at Upazila Health Complexes of Bangladesh: An exploration**

By Taufique Joarder Lecturer, School of Public Health, BRAC University

Available from website: [http://www.aaahrh.org/4th\\_conf\\_2009/Taufique\\_Bangladesh.pdf](http://www.aaahrh.org/4th_conf_2009/Taufique_Bangladesh.pdf)

### **3. Management of Acute Malnutrition by Community Health Volunteers in Rural Bangladesh**

By Dr. Ireen Akhter Chowdhury

International workshop on the integration of CMAM April 28-30, 2008 Washington DC, USA

### **4. Causes for Hospitalizations at Upazila Health Complexes in Bangladesh**

By Sirajuddin Ahmed I, A.K. Siddique I, Anwarul Iqbal, F.K.M. Nurur Rahman, Md. Noor Islam, Md. Arif Sobhan, Md. Rafiqul Islam, and R.B. Sack

Submitted on 28<sup>th</sup> August 2010

### **5. Drug Use Pattern in Upazilla Health Complexes of Bangladesh**

By Nur-E-Tasmin, East West University, 2009

### **6. Drug Use Pattern in Upazilla Health Complexes of Bangladesh**

By Mohammad Jahangir Alam, East West University, 2009



**7. Prescribing pattern and healthcare system analysis in various government medical college hospital in Bangladesh**

**By: ID-2007000300018, Batch-9<sup>th</sup>- 'A' Semester-Spring' 2011  
SOUTHEAST UNIVERSITY**

**8. Prescribing pattern and healthcare system analysis in various Thana Health Complexes (THC) in Bangladesh**

**By: ID-2006200300013, Submission date: 5 May, 2011, 8<sup>th</sup> Batch,  
SOUTHEAST UNIVERSITY**



## Proposed New List of Essential Drugs

### A. 29 Essential Drugs for use by the Health and FP Workers

1. \*Aluminium Hydroxide Gel with or without Magnesium Trisilicate, Tablet/Oral Suspension
2. Amoxicillin, Capsule/Suspension (*Injection for Group B*)
3. \*Ampicillin, Capsule/Oral Suspension (*Injection for Group B*)
4. \*Ascorbic Acid/Vitamin C, Tablet (*Injection for Group B*)
5. \*Aspirin, Tablet 75-100mg/300mg
6. \*Benzyl Benzoate, Lotion
7. \*Chlohexidine with or without Cetrimide, Solution /Cream
8. \*Chloramphenicol, Eye/Ear Drops/Ointment
9. \*Chloroquine Phosphate, Tablet/Syrup
10. \*Chloroxylenol, Solution/Cream
11. Combined Oral Contraceptive Pill (Low Dose)
12. \*Ephedrine Hydrochloride, Tablet/Elixir (*Nasal drops for Group B*)
13. \*Ergometrine Maleate, Tablet (*Injection for Group B*)
14. \*Ferrous Sulphate/Fumarate, with or without Folic Acid, Tablet/Syrup
15. \*Glycerin/Glycerol Suppositories, for adult/child/infant
16. \*Ibuprofen, Tablet
17. \*Mebendazole, Tablet
18. \*Oral Rehydration Salts (ORS), Sachet for 500ml
19. \*Paracetamol, Tablet/Syrup/ Suppositories
20. \*Phenoxymethyl Penicillin, Tablet/Syrup
21. Potassium Permanganate, Crystal/Solution (0.1%)
22. \*Quinine Tablet (*Injection for Group B*)
23. Ranitidine, Tablet (*Injection for Group C*)
24. \*Salbutamol, Tablet/Elixir (*Inhaler for Group B*)
25. \*Salicylic Acid + Benzoic Acid, Ointment
26. \*Senna/Sennosides, Tablet
27. \*Vitamin A, Capsule 200,000 IU/50,000 IU (*Injection 100,000 IU for Group C*)
28. \*Vitamin B<sub>1</sub>, Tablet (*Injection for Group B*)
29. \*Vitamin B-Complex, Tablet/Drops

### B. Additional 50 Essential Drugs for the Primary Level of Health Care

30. Activated Charcoal, Tablet
31. \*Adrenaline/Epinephrine, Injection
32. Albendazole, Chewable Tablet
33. \*Aminophylline, Tablet/Injection
34. \*Atropine Sulphate, Injection (*Eye Drops/Ointment in Group D*)
35. \*Atenolol, Tablet
36. Artemether with Lumefantrine, Tablet
37. BCG Vaccine
38. \*Benzathine Penicillin Injection
39. Calamine, Lotion
40. Calcium Carbonate, Tablet
41. \*Chlorpheniramine Maleate, Tablet/Elixir/Injection
42. \*Chlorpromazine Hydrochloride, Tablet/Syrup/Injection
43. \*Cholera Fluid, Intravenous Infusion
44. Ciprofloxacin, Tablet (*Injection and Eye drops for Group C*)
45. \*Co-Trimoxazole, Tablet/Suspension
46. Depot Medroxyprogesterone, Injection

47. Dextromethorphan, Syrup
48. \*Dextrose in Water, Intravenous Infusion, 5%, 25% and 50%
49. \*Diazepam, Tablet/Injection
50. \*Diphtheria Antitoxin
51. Doxycycline, Capsule
52. \*DPT Vaccine
53. \*Ethambutol, Tablet
54. \*Frusemide, Tablet/Injection
55. \*Erythromycin, Tablet/Oral Suspension (*Injection for Group C*)
56. Flucloxacillin, Capsule/Syrup/Injection
57. \*Griseofulvin, Tablet
58. Hepatitis B Vaccine
59. \*Hyoscine Butylbromide, Tablet/Injection
60. \*Isoniazid with or without Ethambutol, Tablet
61. \*Levamisole, Tablet/Syrup
62. \*Lignocaine with or without Adrenaline, Injection 1% and 2%
63. \*Metronidazole, Tablet/Suspension/Injection
64. \*Oral Polio Vaccine
65. \*Oxytocin, Injection
66. \*Pethidine Hydrochloride, Injection
67. \*Phenobarbitone, Tablet/Injection
68. \*Potassium Chloride Tablet/Syrup (*Injection for Group D*)
69. \*Prednisolone, Tablet
70. Primaquine, Tablet
71. \*Procaine Penicillin, Injection
72. \*Propranolol, Tablet (*Injection for Group C*)
73. \*Pyrazinamide, Tablet
74. \*Rifampicin with or without Isoniazid, Tablet
75. \*Sodium Chloride Intravenous Infusion 0.9%, without or with Dextrose of different strengths
76. \*Streptomycin Sulphate, Injection
77. \*Sulfadoxin with Pyrimethamine, Tablet
78. \*Tetracycline/Oxytetracycline Hydrochloride, Capsule/Injection/Ointment
79. \*Water for Injection (sterile/pyrogen free)

**C. Additional 77 Essential Drugs for the Secondary Level of Health Care**

80. \*ACD Blood Pack/Double Bag/Triple Bag
81. Acyclovir, Tablet/Cream (*Eye ointment and Intravenous Infusion for Group D*)
82. \*Allopurinol, Tablet
83. \*Amitriptyline, Tablet
84. \*Anti-Rabies Vaccine
85. \*Barium Sulphate (X-Ray Grade)
86. \*Bendrofluazide, Tablet
87. \*Benzyl Penicillin, Injection
88. Betamethasone with Neomycin, Ointment/Eye drops
89. \*Calciferol, Tablet (*Injection for Group D*)
90. Calcium Gluconate, Tablet/Injection
91. Carbimazole, Tablet
92. Cephadrine, Capsule/Syrup/Injection
93. Cephalexin, Capsule/Tablet/Syrup
94. Clobazam, Tablet

95. \*Clofazimine, Capsule
96. Clarithromycin, Tablet/Suspension (*Intravenous Infusion for Group D*)
97. Clotrimazole Cream/Pessaries/Solution/Dusting Powder
98. \*Cloxacillin, Capsule/Syrup/Injection
99. Co-Amoxiclav Capsules, Dry Syrup, Injection
100. \*Corticosteroid, Eye drops/Ointment
101. \*Dapsone, Tablets
102. \*Dexamethasone, Tablet/Cream/Injection
103. \*Diethylcarbamazine, Tablet/Suspension
104. Famotidine, Tablet
105. \*Folic Acid, Tablet
106. Framycetin Sulphate, Eye Drops/Ointment
107. \*Gentamycin, Injection/Eye Drops/Ointment
108. \*Glibenclamide, Tablet
109. \*Glyceryl Trinitrate, Sub-lingual Tablet /Spray
110. \*Haloperidol, Tablet/Capsule/Oral Liquid (*Injection in Group D*)
111. \*Halothane
112. \*Heparin, Injection
113. \*Hydrocortisone Injection/Cream/Ointment
114. \*Imipramine Hydrochloride, Tablet/Syrup
115. \*Indomethacin, Capsule/Suppository/Sustained Release Tablet
116. \*Insulin, various preparations
117. \*Iodipamide, Injection
118. Iodized Oil, Injection
119. Iothalamic Acid with Meglumine, Oral Solution
120. \*Iron Dextran/Iron Sorbital, Injection
121. \*Isosorbide Dinitrate, Sub-lingual Tablet (*Injection for Group D*)
122. \*Isosorbide Mononitrate, Tablet
123. Levodopa with Carbidopa, Tablet
124. Metformin Hydrochloride, Tablet
125. \*Methyldopa, Tablet (*Injection for Group D*)
126. \*Miconazole, Cream/ Dusting Powder/Spray/Oral Gel
127. MMR Vaccine
128. \*Morphine Sulphate, Injection
129. Nalidixic Acid, Tablet/Syrup
130. \*Naloxone Hydrochloride, Injection
131. \*Neomycin with Bacitracin, Ointment/Powder
132. \*Neostigmine, Tablet/Injection
133. Nortriptyline, Tablet
134. Omeprazole, Capsule
135. \*Phenytoin, Tablet/Capsule/Elixir
136. \*Pilocarpine Eye Drops (Various Strengths)
137. \*Plasma Substitutes/Dextran-40/Succinylated Gelatin Intravenous Infusions
138. \*Plaster of Paris/Ready-made PP Bandages
139. \*Polyvalent Antivenoms
140. Povidone-iodine 10% (Alcoholic Solution)
141. \*Pralidoxime Mesylate, Injection
142. \*Procaine Hydrochloride, Injection (Various Strengths)
143. \*Prochlorperazine, Tablet/Injection
144. \*Promethazine Hydrochloride, Tablet/Injection



145. Rifampicin + Isoniazid + Pyrazinamide with or without Ethambutol, as combination of tablets in blister unipack
146. Sodium Stibogluconate, Injection
147. \*Sodium Bicarbonate Infusion (Various Strengths)
148. \*Sodium Diatrizoate with Meglumine Sodium, Injection
149. \*Spironolactone, Tablet/Capsule
150. \*Stilboestrol/Diethylstilboestrol, Tablet
151. \*Suxamethonium Chloride, Injection
152. \*Tetanus Antitoxin (Minimum 10,000 IU Dose)
153. \*Tetracaine/Amethocaine, Eye Drops
154. \*Thiopental Sodium, Injection
155. \*Trifluoperazine, Tablet/Oral Solution
156. \*Vitamin B<sub>12</sub>, Injection

**D. Additional 101 Essential Drugs for the Tertiary Level of Health Care**

157. \*Acetazolamide, Tablet
158. \*ACTH Injection
159. \*Actinomycin D/Dactinomycin, injection
160. \*Anti-D (Rh<sub>0</sub>) Immunoglobulin
161. Aqueous Iodine Oral Solution (Lugol's Solution)
162. Azathioprine, Tablet/Injection
163. \*Beclomethasone Dipropionate, Aerosol/Dry powder for Inhalation
164. \*Bleomycin, Injection
165. \*Bismuth, Iodoform and Paraffin Paste (BIPP), For Nasal Pack
166. Bupivacaine Hydrochloride, Injection
167. \*Busulphan, Tablet
168. Calcium Folate/Calcium Leucovorin, Tablet/Injection
169. Captopril, Tablet
170. Carbachol, Tablet/Eye Drops
171. Carbamazepine, Tablet/Oral Liquid/Suppository
172. Ceftriaxone, Injection
173. \*Chlorpropamide, Tablet
174. \*Cholestyramine (anhydrous), Powder
175. \*Cinnarizine, Tablet
176. Cisplatin, Injection
177. \*Clomiphene Citrate, Tablet
178. Clomipramine Hydrochloride, Tablet/Syrup/Capsule/Injection
179. Clonazepam, Tablet/Injection
180. Clopidogrel, Tablet
181. \*Chlorambucil, Tablet
182. \*Colchicine, Tablet
183. Crisantaspase/L-asparaginase, Injection
184. \*Cyclophosphamide, Tablet
185. Cyclosporin, Capsule/Oral Solution/Concentrate for Infusion
186. Denazol, Capsule
187. \*Dialysis Fluid
188. \*Diazoxide, Injection
189. \*Digoxin, Tablet/Injection
190. Diltiazem Hydrochloride, Tablet
191. \*Dipyridamole, Tablet/Oral Suspension/Injection
192. \*Disopyramide, Tablet/Capsule

193. \*Doxorubicin, Injection
194. Oestrogens with or without Progestogens for HRT
195. \*Ethosuximide, Capsule
196. \*Flupenthixol Dihydrochloride/Decanoate, Tablet/Injection
197. \*Fluphenazine Hydrochloride/Decanoate, Tablet/Injection
198. \*Fluorescein, Injection and Eye Drops
199. \*Fluorouracil, Capsule/Injection/Cream
200. \*Gallamine Trithiodide, Injection
201. \*Guanethidine Monosulphate/Monosulphate, Injection/Eye Drops
202. \*Human Normal Immunoglobulin, Injection
203. \*Idoxuridine, Eye Drops
204. \*Lactulose, Powder/Solution
205. Liothyronine Sodium, Tablet/Injection
206. \*Lithium Carbonate/Citrate, Tablet/Oral liquid
207. Local Corticosteroid Injections (Intra-articular/Intrasynovial)
208. Lomustine, Capsule
209. Magnesium Sulphate 50%, Injection
210. \*Mannitol Infusion Solution, 10% and 20%
211. \*Melphalan, Tablet/Injection
212. \*Mercaptopurine, Tablet
213. \*Metarminol, Injection
214. Methadone Hydrochloride, Tablet/Injection
215. \*Methotrexate, Tablet/Injection
216. \*Methylprednisolone Sodium Succinate, Injection
217. Metoclopramide Hydrochloride, Tablet/Oral Solution/Injection
218. \*Mitomycin, Injection
219. Mustine Hydrochloride, Injection
220. \*Naproxan, Tablet
221. \*Niclosamide, Tablet
222. \*Nifedipine, Capsule
223. Nitrazepam, Tablet
224. Nitrofurantoin, Tablet
225. Nitrous Oxide-Oxygen for Anaesthesia
226. Nystatin, Tablet/Suspension/Cream/Gel
227. Pancurium Bromide, Injection
228. \*Phenylephrine Hydrochloride, Eye drops
229. \*Plasma Fractions/Human Albumin Solution
230. \*Penicillamine, Tablet
231. \*Prazocin Hydrochloride, Tablet
232. Preparations of Imidazole or Nystatin for Vaginal and Vulval Candidiasis
233. \*Procainamide, Injection/Capsule
234. \*Procarbazine, Capsule
235. Procyclidine Hydrochloride, Tablet/Syrup/Injection
236. \*Progesterone, Pessaries/Vaginal gel/Injection
237. Propantheline Bromide, Tablet
238. \*Sodium Aurothiomalate, Injection
239. \*Sodium Nitroprusside, Injection
240. \*Sodium Valproate, Tablet/Oral Solution/Capsule/Injection
241. Sulphasalazine, Tablet/Suppository
242. \*Sulphinpyrazone, Tablet
243. Sumatriptan Succinate, Tablet/Injection/Nasal Spray

244. Supplemental Parenteral Nutrients, For adding to Infusion
245. Tamsulosin Hydrochloride, Capsule
246. Tamoxifen, Tablet/Capsule
247. \*Thioguanine, Tablet
248. \*Thyroxine Sodium, Tablet
249. \*Triamcinolone Acetonide, Tablet/Cream/Ointment
250. \*Trimetaphan Camsylate, Injection
251. Trimethoprim, Tablet/Suspension/Injection
252. \*Tubocurarine, Injection
253. \*Vasopressin, Injection
254. \*Verapamil Hydrochloride, Tablet/Oral Solution/Injection
255. Vinblastine Sulphate, Injection
256. \*Vincristine Sulphate, Injection
257. \*Warfarin Sodium, Tablet

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\* The item is also included in the Essential Drug List of 1982.

This list was initially compiled by Dr. Humayun K M A Hye and later edited by the Citizens' Committee for Review of Drug Policies.

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(ii) Pharmacy Graduates' Association, Bangladesh.  
Conference Lounge, National Press Club, Dhaka.  
22 September 2006.

**Deleted from the List of 1982:**

- A1. Piperazine Tablet/Elixir
- A2. Glucose
  
- B1. Lidocaine 1%
- B2. Isoniazide with Thiacetazone Tablet
- B3. Homatropine
  
- C1. Chloramphenicol Skin Ointment
- C2. Ether, Anesthetic
- C3. Emetine Hydrochloride Injection
- C4. Sodium Thiosulphate, Injection
- C5. Sodium Antimony Gluconate, Injection
- C6. Tincture Iodine
- C7. Lysol/Cresol/Soap Solution (Surgical)
- C8. Iopanic Acid/ Iobenzamic Acid, Tablet
- C9. Neomarcazole
- C10. Sulphadimidin Tablet
- C11. Sulphanilamide Powder
- C12. Sulphadiazine Injection
- C13. TABC

- C14. Vitamin K, Tablet/Injection
- C15. Nitrogen Mustard Injection
- C16. Zinc Oxide Adhesive Bandage

- S1. Adriamycin
- S2. Folinic Acid for use with Methotrexate
- S3. Atropine, Eye Drops/Ointment
- S4. Tropicamide, Eye Drops
- S5. Proparacaine Hydrochloride, Eye Drops
- S6. Methylcellulose, Eye Drops
- S7. Sulphacetamide, Eye Drops
- S8. Cocaine
- S9. Benzocaine Tablet
- S10. Thiambutacin, Tablet
- S11. Beta-Methoxypsoralen
- S12. Tolnaftate
- S13. Cytosine Arabinoside
- S14. L-Asparaginase
- S15. Methyl CCNU
- S16. Oxprenolol
- S17. Saralasin
- S18. Oxymetholone
- S19. Desmopressin, Nasal Drops/ Injection
- S20. Codeine Phosphate, Tablet
- S21. Salazopyrine
- S22. Beclofen

**Total 43 drugs excluded**

