“Comparison of Prescribing Pattern in Public & Private Health Sectors for the Treatment of ARI (Acute Respiratory Infection) in Dhaka Metropolis”

B. PHARM THESIS

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

Submitted by

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Declaration by the Candidate

I, **Nusrat Jahan** hereby declare that the dissertation entitled **"Comparison of Prescribing Pattern in Public & Private Health Sectors for the Treatment of ARI (Acute Respiratory Infection) in Dhaka Metropolis"** submitted by me to the Department of Pharmacy, East West University and in the partial fulfillment of the requirement for the award of the degree Bachelor of Pharmacy, work carried out by me during the period 2016-2017 of my research in the Department of Pharmacy, East West University, under the supervision and guidance of **Mst. Marium Begum**, Senior Lecturer, Department of Pharmacy, East West University. The thesis paper has not formed the basis for the award of any other degree/diploma/fellowship or other similar title to any candidate of any university.

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Certificate by the Supervisor

This is to certify that the Research entitled **"Comparison of Prescribing Pattern in Public & Private Health Sectors for the Treatment of ARI (Acute Respiratory Infection) in Dhaka Metropolis"** submitted to the Department of Pharmacy, East West University, Aftabnagar, Dhaka in partial fulfillment of the requirements of the Degree of Bachelor of Pharmacy was carried out by **Nusrat Jahan** (ID # 2013 – 1 – 70 – 009) under our guidance and supervision and that no part of the project has been submitted for any other degree. We further certify that all the sources of information and facilities availed of in this connection duly acknowledged.

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Certificate by the Chairperson

This is to certify that the Research entitled **"Comparison of Prescribing Pattern in Public & Private Health Sectors for the Treatment of ARI (Acute Respiratory Infection) in Dhaka Metropolis"** submitted to the Department of Pharmacy, East West University, Aftabnagar, Dhaka in partial fulfillment of the requirements of the Degree of Bachelor of Pharmacy was carried out by **Nusrat Jahan** (ID # 2013 – 1 – 70 – 009). We further indorse that all the sources of information and facilities availed of in this connection duly acknowledged.

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Dr. Chowdhury Faiz Hossain

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Dedication

To my beloved parents and honorable thesis supervisor

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Abstract

World Health Organization (WHO) was suggested some guidelines to evaluate a prescription pattern. Most of the cases, in national aspects, physicians do not follow the guidelines. Irrational prescription pattern is a common finding in Bangladesh. Maximum physicians prescribe the patients in wrong as well irrational way.

Firstly, we can say the generic name of the drug which is totally absent in the prescription. Many brand name drugs have cheaper generic content which confer less therapeutic effects. Ontheother hand, polypharmacy is a common problematic issue. Polypharmacy refers to use of four or more medications by a patient. Therefore, patients are easy to prone drug interaction, non adherence, hospitalization and mortality. In rural area this trend is spread tremendously. Another problem is prescribing of inappropriate antibiotic. Sorrowfully, in Bangladesh most of the physicians think that without antibiotic a prescription will be incomplete. But it’s a great threat to patients, leading to adverse drug reactions, bacterial resistance and elevated costs. Children are also arrested by this rule.

These drugs are not use the only therapeutic interventions, which provide a desirable health level, rational use of them plays an important role in the efficacy and sufficiency of therapeutic interventions. Rational drug utilization means that each individual receives the right medicine, in an adequate dose for an adequate duration, with appropriate information and follow-up treatment, and at an affordable cost.

Like other countries, inappropriate use of drugs due to irrational prescription practices is a common problem in Iran, and requires being concisely controlled. Due to the high cost of inappropriate use of drugs, developing countries face more problems because of the limited economic resources and lack of organized drug policy.

In order to improve the prescription quality and rational prescription pattern promotion there is an inevitable need to investigate the factors that affect doctors' prescription patterns. Studies have shown that there is a correlation between prescription patterns and gender, age, educational status, work experience, economic situation, and physician's specialty. Defining drug prescription and consumption pattern provides advantageous feedback to prescribers in order to improve their prescribing behavior. Prescription

analyzing studies help the policymakers to set the priorities to promote the rational use of medicines nationwide.

This study aims to quantify the current situation of drug use pattern for the treatment of Tuberculosis in correlation with prescribing behavior of physicians based on their different specialties. The objective was to quantify the specialists' prescription pattern in ten different public and private sectors in Dhaka metropolis, Bangladesh and to point out the prescribing behavioral differences among several specialties.

A retrospective cross-sectional study was carried out on the claim data and 6000 prescription is collected from 10 different hospitals among which 5 are private and five are government owned. Outdoor prescription data were obtained on the basis of the claims that the pharmacies submitted to the insurers during 1 year period of the study. More than 6000 prescriptions were analyzed depending on various parameters that is designed and outcome has been justified.

After comparison study we have seen that average number of drug per prescription in case of public hospitals is 4 where as it is 7 for private hospitals. As Acute Respiratory Infection is a specialized disease to be cured and also an infectious diseases so it needs extensive diagnostic test and history study and we see that in both prescription collection from private and public sectors contain 73% and 99% respectively.

As immunity break down in tuberculosis patients it is necessary to prescribe multivitamins and minerals to boost up the patients immunity system. This is why prescription collected from private sectors contains 142% multivitamins and prescriptions collected from public sectors contain 62% multi vitamins.

ARI is prone to patient’s year less than 2 and less than 5 years. Tendency of Antibiotic use was 124% before intervention and after intervention 96% it is reduced by 24% in public sects. In private sectors before intervention it was 157% and after intervention 147% reduced by 6%. Patient satisfaction is also analyzed. Clinical check list is also analyzed.

There is an inevitable need to improve prescription habits among different specialties, especially among general practitioners. This causes the policymakers to put more emphasis on priorities such as continuous education.

Chapter -1

Introduction

1.1. Prescription

A prescription which is given by a doctor or physician is taken as an indication of the doctor's or physician's akttitude towards the disease and the role of drugs in its treatment [1]. The central priority of health care system is providing the right medicine to the right people at the right time [2].

The word "prescription" is derived from the Latin term praescriptus which is made up of two Latin words - Prae - a prefix meaning 'before' and scribere- meaning 'to write' Putting it all together (Prae + scribere), prescription means 'to write before' which reflects the historical fact that a prescription traditionally had to be written before a drug could be compounded and administered to a patient.

Any drug prescription should contain, in legible form, elements required for appropriate dispensing of drugs, to ensure continuity of care and for legal purposes. Rational prescription means that patients receive appropriate medicine in proper dosage, at the lowest cost [3].Inappropriate prescription practices like polypharmacy[4], use of non-essential drugs[5], indiscriminate use of analgesics, antibiotics, and vitamins[3], ignoring important interactions, incomplete prescriptions [6] and poor legibility[7], are contributing to increasing antibiotic resistance [8], adverse drug reactions, serious medication errors8, loss of patient confidence [3] and high cost of treatment[3].

1.1.1. Different Parts of Prescription

Prescriptions are written in a blank of universally accepted format or may be made in pads. A typical prescription consists of the following parts.

1.1.1.1. Physician (Prescriber) Information:

Information about physician is essential so that the doctor could be contacted in emergency to seek clarification and necessary instruction, missing words, confirmation etc. Following information is mentioned on the prescription:

i) Doctor's name, designation and Registration Number

ii) Address with phone number and e-mail.

iii) Date of issue of prescription.

iv) Prescription number, (required when calling the pharmacy for a refill or for insurance purposes).

1.1.1.2. Patient Information:

The name, address, age and sex of the patient help in identifying the prescription. Date of prescribing and date(s) of presentation for filling are necessary for keeping accurate records and ascertaining the needs of the patient. Age and sex of the patient, if mentioned, help the pharmacist to check the prescribed dose (s) of the medication.

i) Name of Patient: The prescribed medication is only for the patient whose name is on the label. Medications should not be given to another patient even if the other patient has similar symptoms.

ii) Sex: Male / Female

iii) Age and weight: For calculation of dose, dose frequency and route of administration.

1.1.1.3. Superscription:

The superscription which consists of the heading where the symbol Rx (an abbreviation for recipe, the Latin for 'take thou' or 'you take' is found. Rx symbol comes before the inscription. The sign at the foot of the letter R is believed to represent the sign of Jupiter, the God of Healing. Some historians believe that the symbol Rx originated from the sign of Jupiter.

1.1.1.4. Inscription:

The inscription (body of prescription) comprises an important part of prescription containing-

i) Name(s) of drug(s) and their quantities,

ii) Other chief ingredients of the prescription with quantity,

iii) Instruction regarding dosage form like tablet, capsule, suspension, mixture, etc., and

iv) Dose and quantity of prescription

1.1.1.5. Subscription:

The subscription gives specific directions for the pharmacist on how to compound the medication. Most of direction is usually expressed in contracted Latin or in the form of abbreviation. Instructions for preparation are also given such as: 'make a mixture', 'mix and make 10 tablets', or 'dispense 10 capsules'.

1.1.1.6. Transcription or Signatura

The signatura which gives instructions to the patient -

1. How, how much, When, and how long the drug is to be taken.

These instructions are preceded by abbreviation 'Sig.' from the Latin, meaning 'mark.' The signatura should always be written in English; however, physicians continue to insert Latin abbreviations, e.g.,' 1 cap t.i.d. pc' which the pharmacist translates into

English as 'take one capsule three times daily after meals'. It may also contain special instructions, warnings, followed by the signature of the prescriber.

1.1.1.7. Renewal:

The number of times a prescription is to be repeated is written by the physician under renewal instructions.

1.1.1.8. Signature:

Finally the prescription must bear the signature of the prescriber to impart it the legal validity.

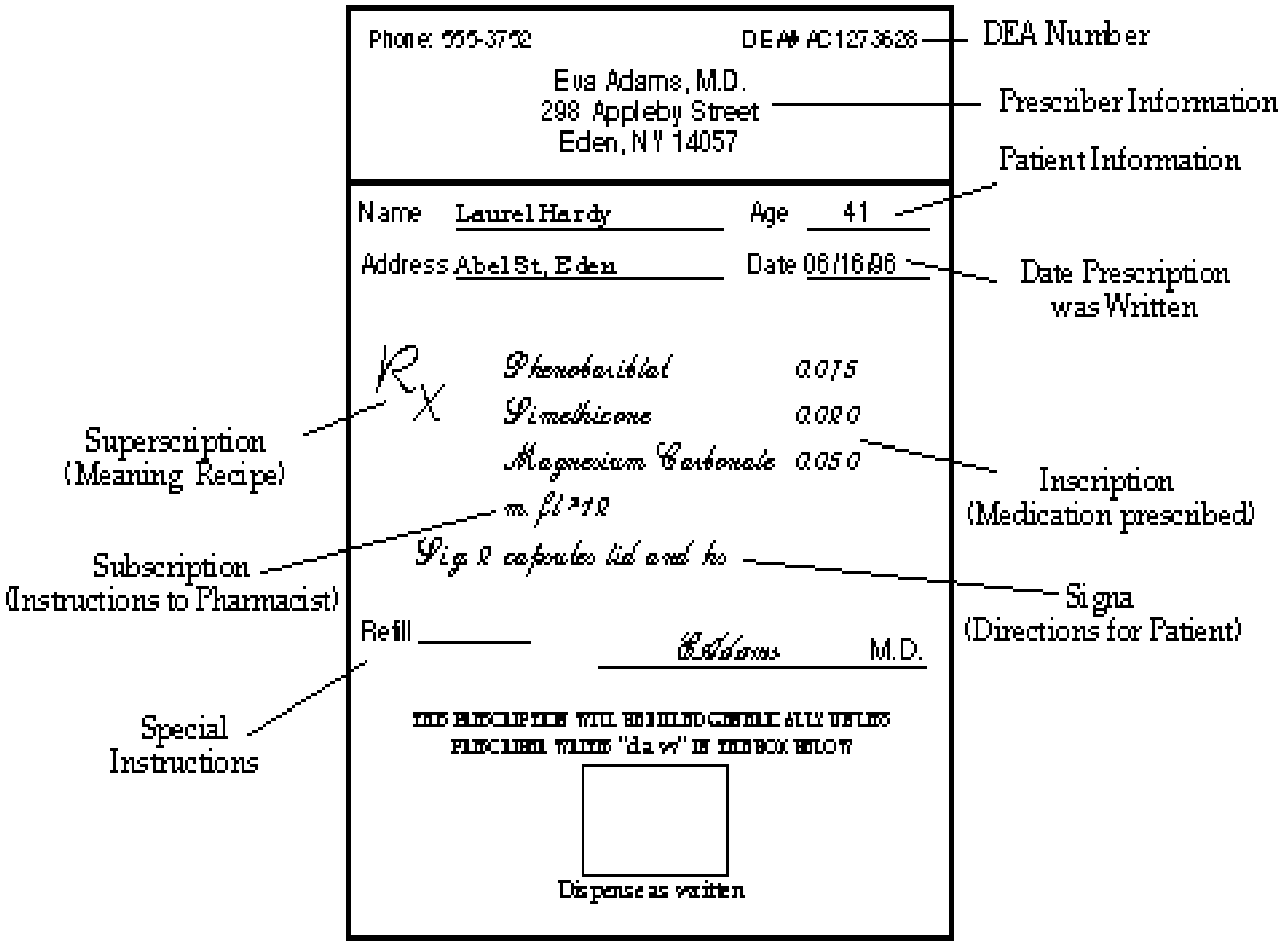


Figure-1.1: Different parts of Prescription

1.1.1.9 Other important instructions

(a) Refills - the label will show the number of refills permitted /no refills

(b) Qty: "quantity" or how much is in the package.

(c) Mfg.: "manufacturer" or who makes the medication.

(d) Expiry date: do not use the medication past this date. Do not save unused prescription. If same patient gets sick again, prescriber should be consulted.

(e) Take complete /full course: means that patient should finish taking the entire contents of the prescription even if feeling better especially patient taking antibiotics. This is to avoid recurrence of infection and development of resistance.

(f) Take with / without food: means whether the medication is to be taken after a meal or empty stomach. Some medications work better when the stomach is full while some medications work better when the stomach is empty.

(g) Take four times a day: means to take the medication four times in 24 hours with equal spacing of time. It is different than 'Take every four hours'. If any confusion occurs when to give the medications, one should consult doctor or pharmacist. Most medications do not have to be precisely timed to be effective, but some do.

(h) Take as needed as symptoms persist: means the medication can be taken when symptoms are present, without consulting the prescriber.

(i) The package may also have bright colored warning labels with additional information. The following are examples:

(i) Safe storage instructions, such as 'keep refrigerated'.

(ii) Instructions for use, such as 'shake well before use'.

(iii) Possible side effects, such as 'may cause drowsiness'.

1.1.2. Types of Prescription

1.1.2.1. Erroneous Prescriptions

- Where the brand name precedes the generic name
- Where the generic name is the one in parenthesis
- Where the brand name is not in parentheses
- Where more than one drug product is prescribed on one prescription form.

What to do with erroneous prescriptions

Erroneous prescriptions shall be filed. Such prescription shall also be kept and reported by the pharmacist of the drug outlet or any other interested party to the nearest DOH office for appropriate action.

1.1.2.2. Violative Prescriptions

- Where generic name is not written
- Where the generic name is not legible and a brand name which is legible is written
- When the brand name is indicated and instructions added (such as the phrase " no substitution") which tend to obstruct, hinder or prevent proper generic dispensing.

What to do with violative prescriptions

Violative prescriptions shall not be filed. They are kept and reported by the pharmacist of drug outlet or any other interested party to the nearest DOH office for appropriate action. The pharmacist shall advise the prescriber of the problem and/or instruct the customer to get the proper prescription.

1.1.2.3 Impossible Prescriptions

- When only the generic name is written but it is not legible.
- When the generic name does not correspond to the brand name
- When both the generic name and the brand name are not legible
- When the drug product prescribed is not registered with FDA

What to do with impossible prescriptions

Impossible prescription shall not be filed. They shall be and reported by the pharmacist of drug outlet or any other interested party to the nearest DOH office for appropriate action. The pharmacist shall advise the prescriber of the problem and/or instruct the customer to get the proper prescription.

1.2. Polypharmacy

The term polypharmacy refers to the group of medications one person may be taking. It comes from two Greek root words: poly, meaning many, and pharmakeia meaning medicines or drugs. It is generally used when that one person is taking too many medications, or when the drugs have been prescribed by many doctors, and may not have been coordinated well. The definition of polypharmacy is still controversial [9, 10, and 11].

Although the term polypharmacy has evolved over time and is often used to mean many different things in different situations, its basic definition is quite simple, more drugs are prescribed or taken than are clinically appropriate [12]. The specific number of drugs taken is not itself indicative of polypharmacy as all of the drugs may be clinically necessary and appropriate for the patient; however, as the number of prescribed drugs increases, so do the chances of Polypharmacy [13].

A 2002 US survey indicated that 25% of the overall population takes five or more medications per week [14]. When specifically considering the population 65 years of age and older, this percentage increases to about 50%, with 44% of men and 57% of women taking five or more medications per week and 12% of both sexes taking 10 or more prescriptions per week [15]. The most worrisome consequence of polypharmacy is the occurrence of adverse drug reactions (ADRs), but increased drug costs and patient quality of life are also significant issues [16, 17]. The elderly population, which often suffers from multiple chronic diseases requiring multiple medications, continues to increase. These patients are much more likely to experience Polypharmacy and its negative consequences, especially ADRs [18, 19, 20, 21, 22].

ADRs are one of the most troubling issues surrounding medication use in the elderly, as this patient population is more likely to have poor outcomes than others [23]. ADRs affect approximately 10-20% of hospitalized patients and around 7% of the general population; this number increases when the population of interest is limited to the elderly [24,25].

1.2.1. Reasons for Polypharmacy

Considering the large number of polypharmacy concepts, there is need of an agreement in relation to this definition to evaluate its frequency, control its occurrence and to identify the risk of adverse reactions associated with polypharmacy [26]. There are several reasons for polypharmacy:

- ➢ As the population ages, polypharmacy increases. The elderly often required multiple medications to treat multiple health-related conditions [27].
- ➢ Patient with multiple comorbid medical conditions also required numerous medications to treat each condition. It is not unreasonable for patient with multiple comorbid medical conditions to be on 6-9 medications to reduce his or her long-term risk for those conditions, i.e, diabetes conditions and coronary events [28].

- ➢ A recent hospitalization also puts patients at risk of polypharmacy. Medicines are started and stopped quite frequently during patient hospital stay.
- ➢ Multiple doctors are prescribing medications for the same patient. Once a patient starts a medication, it is never discontinued.
- ➢ Lack of patient education is the most common reason. Doctors do not inform patients or patients do not ask questions.

Polypharmacy may occur when additional drugs are prescribed to treat the adverse effects of other drugs. This is known as the 'prescribing cascade' [29,30]. Other suboptimal prescribing associated with polypharmacy includes prescription of more than one drug in the same class or prescription of a drug that interacts with or is contraindicated in combination with another of the patient's medicines [31].

Polypharmacy in of itself is not problematic.Polypharmacy can, however, become problematic when negative outcomes occur. Polypharmacy has been shown to result in:

- ➢ Unnecessary and/or inappropriate medication prescribing.
- ➢ Increased risk for drug interactions and ADRs [32].
- ➢ Nonadherence.
- ➢ Increased overall drug expenditures.

1.3. Rational and Irrational Use of Drugs

1.3.1. Rational Use of Drugs

The terms "appropriate" and "rational" use of drugs will be used interchangeably throughout the session. The Conference of Experts on the Rational Use of Drugs, convened by the World Health Organization in Nairobi in 1985, defined rational use as follows:

Rational use of drugs requires that patients receive medicines 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 [33].

This definition clarifies that there should be a process of prescription, which includes-

- Correctly in defining a patient's problems (or diagnosis)
- Correctly in defining effective and safe treatments (drugs and nondrug)
- Correctly in selecting appropriate drugs, dosage, and duration
- Proper writing a prescription
- Proper giving patients adequate information and
- Proper planning to evaluate treatment responses.

The definition implies that rational use of drugs, especially rational prescribing, should meet certain criteria as follows:

i. Appropriate indication. The decision to prescribe drug(s) is entirely based on medical rationale and the drug therapy is an effective and safe treatment.
ii. Appropriate drug. The selection of drugs is based on efficacy, safety, suitability, and cost considerations.
iii. Appropriate patient. No contraindications exist, the likelihood of adverse reactions is minimal, and the drug is acceptable to the patient.
iv. Appropriate patient information. Patients are provided with relevant, accurate, important and clear information regarding their conditions and the medication(s) that are prescribed.
v. Appropriate evaluation. The anticipated and unexpected effects of medications are appropriately monitored and interpreted [34].

1.3.2. Irrational Use of Drugs

Irrational prescribing may be regarded as "pathological" prescribing when the above-mentioned criteria are not fulfilled. Common patterns of irrational prescribing may, therefore, be manifested in the following forms: [35,36,37]

- ➢ The use of drugs when no drug therapy is indicated, e.g., antibiotics for viral upper respiratory infections
- ➢ The use of the wrong drug for a specific condition requiring drug therapy, e.g., tetracycline in childhood diarrhea requiring ORS
- ➢ The use of drugs with doubtful or unproven efficacy, e.g., the use of antimotility agents in acute diarrhea
- ➢ The use of drugs of uncertain safety status, e.g., use of dipyrone (Baralgan, etc.) Failure to provide available, safe, and effective drugs, e.g., failure to vaccinate against measles or tetanus, or failure to prescribe ORS for acute diarrhea
- ➢ The use of correct drugs with incorrect administration, dosages, and duration, e.g., the use of IV metronidazole when suppositories or oral formulations would be appropriate
- ➢ The use of unnecessarily expensive drugs, e.g. the use of a third generation, broadspectrum antimicrobial when a first-line, narrow spectrum agent is indicated

Some examples of commonly encountered inappropriate prescribing practices in many health care settings include— [35,36,37]

- ➢ Overuse of antibiotics and antidiarrheals for nonspecific childhood diarrhea
- ➢ Indiscriminate use of injections, e.g., in malaria treatment
- ➢ Multiple or over-prescription
- ➢ Excessive use of antibiotics for treating minor TB

- ➢ Multivitamins and tonics for malnutrition
- ➢ Unnecessary use of expensive antihypertensives

1.3.3. Factors Underlying Irrational Use of Drugs

Many different factors affect the irrational use of drugs. In addition, different cultures view drugs in different ways, and this can affect the way drugs are used [35,36,37]. The major forces can be categorized as those deriving from patients, prescribers, the workplace, the supply system including industry influences, regulation, drug information and misinformation, and combinations of these factors.

• Patients	- drug misinformation
	- misleading beliefs
	- patient demands/expectations
• Prescribers	- lack of education and training
	- inappropriate role models
	- lack of objective drug information
	- generalization of limited experience
	- misleading beliefs about drugs efficacy
• Workplace	- heavy patient load
	- pressure to prescribe
	- lack of adequate lab capacity
	- insufficient staffing
• Drug Supply System	- unreliable suppliers
	- drug shortages
	- expired drugs supplied
• Drug Regulation	- nonessential drugs available
	- informal prescribers

	- lack of regulation enforcement
• Industry	- promotional activities
	- misleading claims

All of these factors are affected by changes in national and global practices. For example, the frequent use of injections is declining in many African countries because of the fear of AIDS. In some countries, however, the use of injectibles remains high due to false assumption of prescribers that injections will improve patient satisfaction and that they are always expected by the patients.

1.3.4. Types of Irrational Use of Drugs

1) Under-prescribing

Occurs when:
● Needed medications are not prescribed ● The dosage prescribed is inadequate

2) Over-prescribing:

Occurs when:
● The prescribed drug is not needed by the patient ● The quantity of drug dispensed is too much for current course of treatment

3) Incorrect prescribing or dispensing:

Occurs when:
● Prescribing the wrong drug. ● Dispensing the wrong drug due to the prescription being prepared improperly ● Adjustments are not made for existing medical, genetic, environmental or other conditions

4) Extravagant prescribing:

Occurs when:
● Prescribing a more expensive branded drug when there is a less expensive generic drug of good quality available. ● Treating the patient symptomatically instead of treating the serious illness, hence making the patient use a lot of his funds.

5) Multiple prescribing:

Occurs when:
• Two or more medications are prescribed when fewer would achieve the same effect

Figure – 1.2: The vicious cycle that leads to overuse of medicines. Source: WHO, 1997, managing drug supply.

1.3.5. Factors That Influence Irrational Drug Use

Many interrelated factors influence drug use and can all contribute to irrational use. The health system, prescriber, dispenser, patient, and community are all involved in the therapeutic process. Let us look at the factors affecting each of these players.

1.3.5.1. Health System

Factors affecting the health system include unreliable supply, drug shortages, expired drugs, and availability of inappropriate drugs. Such inefficiencies in the system lead to a lack of confidence in the system by the prescriber and the patient. The patient demands treatment and the prescriber feels obliged to give what is available, even if the drug is not the correct one to treat the condition.

1.3.5.2. Prescriber

The prescriber can be affected by internal and external factors. He or she may have received inadequate training, or may be using outdated prescribing practices due to a lack of continuing education. There may be a lack of objective drug information, and the information provided by drug representatives may be unreliable. The prescriber may be tempted to generalize inappropriately about the effectiveness or side effects of drugs on the basis of limited personal experience. Externally, a heavy patient load and pressure to prescribe from peers, patients, and drug company representatives all complicate prescribing decisions. Finally, profit may affect a prescriber's choice if the prescriber's income is dependent on drug sales.

1.3.5.3. Dispenser

The dispenser plays a crucial role in the therapeutic process. The quality of dispensing may be affected by the training and supervision the dispenser has received and the drug information available to the dispenser. A shortage of dispensing materials and short dispensing time due to heavy patient load may also have an adverse impact on dispensing. Finally, the low status of dispensers affects the quality of dispensing.

1.3.5.4. Patient and Community

The individual's adherence to treatment is influenced by many factors, including:

- cultural beliefs,
- the communication skills and attitudes of the prescriber and dispenser,
- the limited time available for consulting,
- the shortage of printed information, and
- Community beliefs about the efficacy of certain drugs or routes of administration.

For example, there may be a belief that injections are more powerful than capsules, or that capsules are more effective than tablets.

It is clear that although the knowledge and experience of the prescriber are important aspects of the interaction between prescriber and patient, they are not the only factors. As discussed above, there are many causes for irrational drug use and many factors are involved in the decision making process.

These factors vary for each person and situation. This means that specific interventions to improve prescribing may work under some circumstances but not others. Due to the complexity of factors, involved, it is unlikely that any single intervention will work in every situation.

1.4. Prescription pattern and monitoring

Prescription pattern monitoring studies (PPMS) are a tool for assessing the prescribing, dispensing and distribution of medicines.Medicines are an integral part of the health care, and modern health care is impossible without the availability of necessary medicines. They not only

save lives and promote health, but prevent epidemics and diseases too. Accessibility to medicines is the fundamental right of every person.[39]
Bad prescribing habits lead to ineffective and unsafe treatment, exacerbation or prolongation of illness, distress and harn1 to the patient and higher costs. They also make prescriber vulnerable to influences which can cause irrational prescribing[40]. Irrational prescription of drugs is of common occurrence in clinical practice [41]. Important reasons being lack of knowledge about drugs, unethical drug promotions and irrational prescribing habits of clinicians. Monitoring of prescriptions and drug utilization studies can identify the problems and provide feedback to prescribers so as to create an awareness about irrational use of drugs [42].

Drug utilization research was defined by World Health Organization (WHO) in 1977 as a marketing, distribution, prescription, and use of drugs in society, with special emphasis on the resulting medical, social and economic consequences. Pharmacoepidemiology is the study of the use and effects/side-effects of drugs in large numbers of people with the purpose of supporting the rational and cost-effective use of drugs in the population thereby improving health outcomes. Drug utilization research is thus an essential part of pharmacoepidemiology as it describes the extent, nature and determinants of drug exposure.Together, drug utilization research and pharmacoepidemiology may provide insights into many aspects of drug use and drug-prescribing. They provide much useful information on indirect data on morbidity, treatment cost of illness, therapeutic compliance, incidence of adverse reactions, effectiveness of drug consumption and choice of comparators.[43]

Prescription pattern monitoring studies (PPMS) are drug utilization studies with the main focus on prescribing, dispensing and administering of drugs. They promote appropriate use of monitored drugs and reduction of abuse or misuse of monitored drugs. PPMS also guide and support prescribers, dispensers and the general public on appropriate use of drugs, collaborate and develop working relationship with other key organizations to achieve a rational use of drugs.[44]

Prescription Patterns explain the extent and profile of drug use, trends, quality of drugs, and compliance with regional, state or national guidelines like standard treatment guidelines, usage of drugs from essential medicine list and use of generic drugs. There is increasing importance of PPMS because of a boost in marketing of new drugs, variations in pattern of prescribing and consumption of drugs, growing concern about delayed adverse effects, cost of drugs and volume of prescription.[44]

The aim of PPMS is to facilitate the rational use of drugs in a population. Irrational 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 overuse, underuse or misuse of medicines results in wastage of scarce resources and widespread health hazards. The rational use of medicines (RUM) is defined as “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.[43]

Prescription patterns have been studied in a variety of settings. The experience accumulated over time has originated a standard assessment methodology, well-known and applied worldwide (WHO, 1993). Prescription patterns depend on the professional qualifications of the prescribers, the quality of their training, in-service training and supervision activities, ingrained traditions, market incentives, patient preferences, regulatory provisions, drug supply constraints, the availability of treatment guidelines.

These factors evolve during a protracted crisis, not all in the same direction, nor uniformly. A patchwork of findings is common. The contraction of commercial outlets outside large towns may reduce the availability of unneeded drugs. Their replacement by standard kits induces a measure of rationing. An ensuing drop in the misuse of antibiotics and injections, although negatively perceived by prescribers and patients alike, represents a tangible improvement. On the other hand, the commodisation of health care encourages the prescription of unneeded, even harmful drugs. Against the general decline of standards, health services supported or directly provided by some capable NGOs may receive a boost in terms of in-service training, supply and supervision, which translates into improved prescription practice. Such improvements, if due only to external resources, capacity and pressure, may be short-lived. Standard treatment guidelines may have been formulated and taken roots in daily practice before the crisis. When this is the case, collaborative NGOs may adopt them. Other health service providers, bound to their own international standards, prefer to ignore national guidelines. Over time, health care fragments.

Not many battered health sectors have invested in formulating standard treatment guidelines, or in updating old ones, during a crisis. Precious opportunities to disseminate sound professional practice are wasted. Disease-control programmes and international agencies are left in charge of filling this gap. As they are unlikely to reach a measure of consensus, guidelines multiply.

Diverging views, with government officials extolling the merits of existing guidelines, despite their unavailability, alongside NGO managers downplaying their value, without even having examined them, are commonplace. Higher-level cadres are likely to be dismissive of guidelines perceived as constraints to their medical practice. The true users of treatment guidelines, frontline health care providers, may remain unheard in these futile discussions.

Drugs play an important role in protecting, maintaining and restoring health. Prescription writing is a science and an art, as it conveys the message from the prescriber to the patient. The treatment of diseases by the use of essential drugs, prescribed by their generic names, has been emphasized by the WHO and the National Health Policy of India.

The cost of drug prescription poses problems in developing countries such as India, which allocates only 0.9% of its Gross Domestic Product (GDP), i.e. Rs. 200 per capita,to health. The allocation for meeting the cost of the drugs is even meager. Moreover, the production of

pharmaceutical preparations in India is grossly imbalanced and there is cut throat competition among drug companies, which breeds malpractice. Indian markets are flooded with over 70,000 formulations, as compared to about 350 listed in the WHO essential drug list, and pharmaceutical companies encourage doctors to prescribe branded medicines, often in exchange for favors. This study was, therefore, undertaken with the aim to find out the prescription pattern and cost per prescription at different levels of health facilities in the public health facilities of Lucknow - the capital city of Uttar Pradesh, a state in north India.

Prescription Guideline

This manual focuses on the process of prescribing. It gives you the tools to think for yourself and not blindly follow what other people think and do. It also enables you to understand why certain national or departmental standard treatment guidelines have been chosen, and teaches you how to make the best use of such guidelines. The manual can be used for self-study, following the systematic approach outlined below, or as part of a formal training course.

Part 1: The process of rational treatment

This overview takes you step by step from problem to solution. Rational treatment requires a logical approach and common sense. After reading this chapter you will know that prescribing a drug is part of a process that includes many other components, such as specifying your therapeutic objective, and informing the patient.

Part 2: Selecting your P-drugs

This section explains the principles of drug selection and how to use them in practice. It teaches you how to choose the drugs that you are going to prescribe regularly and with which you will become familiar, called P (ersonal)-drugs. In this selection process you will have to consult your pharmacology textbook, national formulary, and available national and international treatment guidelines. After you have worked your way through this section you will know how to select a drug for a particular disease or complaint.

Part 3: Treating your patients

This part of the book shows you how to treat a patient. Each step of the process is described in separate chapters. Practical examples illustrate how to select, prescribe and monitor the treatment, and how to communicate effectively with your patients. When you have gone through this material you are ready to put into practice what you have learned.

Part 4: Keeping up-to-date

To become a good doctor, and remain one, you also need to know how to acquire and deal with new information about drugs. This section describes the advantages and disadvantages of different sources of information.

Annexes

The annexes contain a brief refresher course on the basic principles of pharmacology in daily practice, a list of essential references, a set of patient information sheets and a checklist for giving injections.

Drug names

In view of the importance that medical students be taught to use generic names, the International Nonproprietary Names (INNs) of drugs are used throughout the manual.

1.5. Pharmacy practice

Pharmacy practice is the discipline of pharmacy which involves developing the professional roles of pharmacists.

Over the past four decades there has been a trend for pharmacy practice to move away from its original focus on medicine supply towards a more inclusive focus on patient care. The role of the pharmacist has evolved from that of a compounder and supplier of pharmaceutical products towards that of a provider of services and information and ultimately that of a provider of patient care. Increasingly, the pharmacist's task is to ensure that a patient's drug therapy is appropriately indicated, the most effective available, the safest possible, and convenient for the patient. By taking direct responsibility for individual patient's medicine-related needs, pharmacists can make a unique contribution to the outcome of drug therapy and to their patients' quality of life. The new approach has been given the name pharmaceutical care. The most generally accepted definition of this new approach is: "**Pharmaceutical care** is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life".[45]

In adopting this definition in 1998, the International Pharmaceutical Federation (FIP) added one significant amendment: "achieving definite outcomes that improve or maintain a patient's quality of life". The practice of pharmaceutical care is new, in contrast to what pharmacists have been doing for years. Because pharmacists often fail to assume responsibility for this care, they may not adequately document, monitor and review the care given. Accepting such responsibility is essential to the practice of pharmaceutical care. In order to fulfil this obligation, the pharmacist needs to be able to assume many different functions. The concept of the seven-star pharmacist, introduced by WHO and taken up by FIP in 2000 in its policy statement on Good Pharmacy

Education Practice, sees the pharmacist as a caregiver, communicator, decision-maker, teacher, life-long learner, leader and manager.[46]

1.5.1. New dimensions of pharmacy practice

- Pharmaceutical care
- Evidence-based pharmacy
- Meeting patients' needs
- Chronic patient care – HIV/AIDS
- Self-medication
- Quality assurance of pharmaceutical care services
- Clinical pharmacy
- Pharmacovigilance. [45-47]

1.6. Antibiotic Resistance

Antibiotic resistance in respiratory bacteria now poses a serious threat to the mortality gains of recent decades. As in developed countries, widespread use of antibiotics in developing countries has resulted in many bacteria becoming partially or completely resistant to some antibiotics. In developed countries, 75% of antibiotic prescriptions are useful but most prescriptions are unnecessary. The unnecessary use of antibiotic is expensive and it hastens the development of antibiotic resistance.[48]

1.7. Respiratory Tract Infections (RTIs)

Respiratory tract infection refers to any number of infectious diseases involving the respiratory tract. An infection of this type is normally further classified as an upper respiratory tract infection (URI or URTI) or a lower respiratory tract infection (LRI or LRTI).

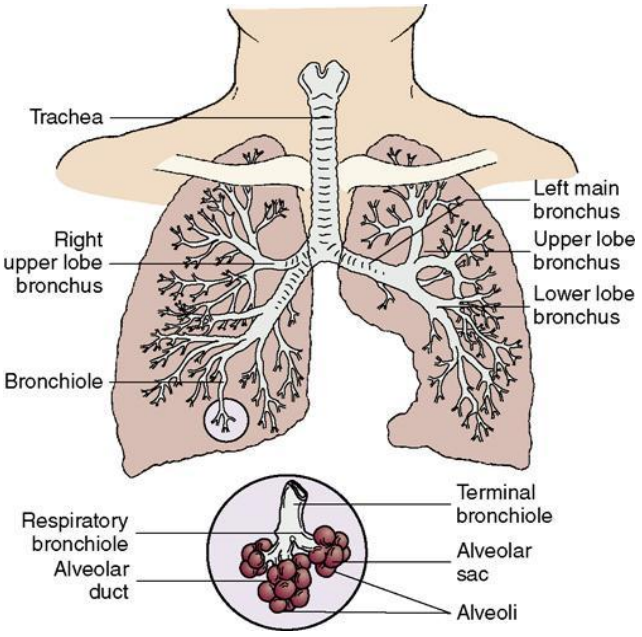


Figure -1.3: The respiratory system

1.7.1. Symptoms of Respiratory tract infection

Symptoms of possible respiratory tract infections (RTIs), such as cough, sore throat and rhinitis are common in the community. In the USA, 19% of an adult population reported to have had a cough, cold or another acute illness in the previous few days [49]. In Norway 13.8% of an elderly population reported symptoms of airway infection within the last 3 weeks [50]. Symptoms of airway infection are frequent reasons for seeking health care [51], but most subjects with a possible RTI do not visit their family doctor.

1.7.2. Classifications of respiratory tract infections

An infection of this type is normally further classified as

1. Upper respiratory tract infection (URI or URTI) or

2. Lower respiratory tract infection (LRI or LRTI).

1.7.3. Upper respiratory tract infection (URTI)

Upper respiratory tract infection (URTI) has been recognized as one of the most common medical problems in the daily lives of people worldwide. However, an URTI is referred to as a viral infection causing inflammation and infection in the nose and throat. URTIs are contagious which remain for few hours to 2-3 days of exposure. Also, the symptoms have been known to last from 7-10 days, but reports have shown that the symptoms may last even longer. URTI has

been regarded as a nonspecific term that is used to describe acute infections involving the nose, para nasal sinuses, pharynx, larynx, trachea, and bronchi. [52,53]

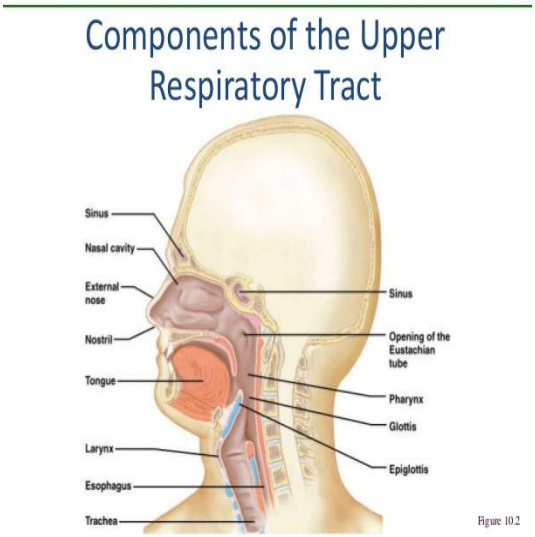


Figure – 1.4: The componenets of upper respiratory tract.

1.7.3.1. Sign and Symptoms

Various signs and symptoms of URTIs have been reported which include- stuffy and runny nose,sneezing,coughing, sore throat, fever, vomiting, irritability, loss of appetite, and watery eyes.[54,55,56]

1.7.3.2. Viruses causing most URTIs include

Rhinovirus, parainfluenza virus, coronavirus, adenovirus, respiratory syncytial virus, coxsackievirus, and influenza virus in most cases. [57, 58, 59]

1.7.3.3. Bacteria causing most URTIs include

Beta-hemolytic streptococci, *Corynebacteriumdiphtheriae, Neisseria gonorrhoeae, Arcanobacteriumhaemolyticum, Chlamydia pneumoniae, Mycoplasma pneumoniae, Streptococcus pneumoniae, Haemophilusinfluenzae, Bordetella pertussis, and Moraxella catarrhalis* .[57,58,59]

1.7.3.4. URTIs: Types

URTIs can be characterized by a group of disorders which include common cold, pharyngitis, tonsillitis, epiglottitis, sinusitis, bronchitis, rhinitis, and nasopharyngitis, which significantly occurs in upper respiratory tract.

The term **common cold** can be referred to as one of the upper respiratory infection whose first infectious site is nose, which further radiates to throat and sinuses. The common cold has been documented to be caused by approximately 200 viruses, with a developing time of symptoms of 7-10 days.[60] Coronavirus, rhinovirus, human parainfluenza virus, adenovirus, enterovirus, metapneumovirus, and human respiratory syncytial virus.[61,62] The infection has been known to spread progressively by direct contact, by circulation of air and by using contaminated things.

The pathophysiological mechanism has been attributed to the binding of rhinovirus with human intracellular cell adhesion molecules (ICAM-1) receptor after invading, causing the release of inflammatory mediators, ultimately leading to the occurrance of disease symptoms.[63] Various preventive measures have been employed that include maintaining personal care and hygienic conditions, washing of hands, use of face masks, gloves and proper vaccination. In addition, the treatment stratergies involve intake of fluids, gargling with saline water, and steam inhalation. Also, drugs like analgesics and antipyretics, first generations antihistaminics and decongestants have been employed.[64,65]

Pharyngitis, the inflammation of pharynx or throat at back side, can be divided into two types, i.e., acute and chronic. In addition, the pharyngitis can be classified into viral pharyngitis and bacterial pharyngitis according to their cause, that has been known to occur at an age of 4-8 years.[66,67] The viruses include adenovirus, influenza virus, cytomegalovirus, epstein-barrvirus, herpes simplex virus, rhinovirus, coronavirus, and syncytial virus; whereas streptococci, chlamydophilapneumoniae, mycoplasma pneumoniae, corynebacteriumdiptheriae, and neisseriagonorrhoeae are the bacterias which have been known to cause pharyngitis.[68]

Common symptoms of pharyngitis include rheumatic fever, red-sore throat, yellow coloured secretion from nose, hypertrophy of tonsils, coughing, conjunctivitis, severe pain, enlargement of lymphs, headache, malaise, and difficulty in swallowing. The various prevention and treatment approaches include regular washing of hands, ignorance of direct contact with infected person, and avoiding smoking.[66] Moreover, local anaesthetics like lidocaine and benzocaine alongwith antipyretics have been suggested to provide momentary relief.[69]

Sinusitis, another type of URTIs, can be defined as the occurrence of inflamed state of mucosal membrane and airfilled cavities. The sinuseshave been classified into following subunits namely maxillary sinuses, frontal sinuses, ethmoid sinuses, sphenoid sinuses, anal sinuses, and dural venous sinuses.[70] . In addition, sinusitis can be further classified into acute sinusitis and chronic sinusitis, based on the duration of occurrance and termination of symptoms.[70,71] Numbers of causative factors have been found to be involved in the occurrence of rhinosinusitis, which include immunological deficiency, seasonal and altitude variation, severe common cold condition, allergies, unusual changes in anatomy of nasal septum, and smoke.[72] Moreover, sinusitis may be of classified as viral, fungal or bacterial sinusitis based on the type of organism invaded. Generally, difference between viral, bacterial or fungal rhinosinusitis is identified by symptoms.[70]

In addition, various drug therapies like antibiotics, corticosteroids, decongestants, and analgesics have been reported to show beneficial effects in patients presented with sinusitis.[73]

Bronchitis, the inflammatory state of bronchi, is another type of URTIs which has been commonly found to affect a large number of people worldwide. In bronchitis, chest X-ray is the main diagnostic procedures employed.[74] Moreover, bronchitis can be acute whose signs and symptoms terminate within 7-8 days; and chronic, whose signs and symptoms occur for 3-6 months. A number of causative agents have been found to be involved in the occurance of bronchitis which include smoking, air pollution, decreased immunological response, and seasonal changes.[74] In addition, rhinovirus and adenovirus have been reported to cause bronchitis, whereas, bacterias known to cause bronchitis include mycoplasma pneumoniae, chlamydophilapneumoniae, bordetella pertussis, streptococcus pneumoniae, and haemophilusinfluenzae. Various signs and symptoms have been suggested for bronchitis like coughing, coryza, sore throat, migraine like headache, typical fever, excess production of mucus, wheezing, difficulty in breathing, bronchospasm, fatigue, and chest pain.[75] Mantainence of personal hygienic care, avoiding smoking, employment of humidifier, avoiding mucous productive eatables, mask and gloves usage accounts for the initial preventive measures. In addition, various drugs like beta-adrenergic agonists, anticholinergics, decongestants, expectorant, cough suppressants, and corticosteroids have been suggested to offer potential benefits.[75, 76]

Tonsilitis, another common type of URTIs, can be defined as the state of inflamed condition of palatine tonsils, pharyngeal tonsils, tubal tonsils, and lingual tonsil. A number of viruses have been reported to cause tonsillitis which include adenovirus, rhinovirus, cytomegalovirus, epstein-barr virus, herpes simplex, measles virus, and respiratory syncytial virus.[77] In addition, streptococcus pneumoniae, staphylococcus aureus, streptococcus, mycoplasma pneumoniae, and chlamydia pneumoniae are the common bacterias involved in the pathogenesis if tonsilitis. The signs and symptoms which have been suggested to appear in tonsillitis include typical fever, lethargy, headache, earache, difficulties in swallowing, voice complications, tonsils inflammation, halitosis, and sore throat.[54,55] Further, various precautionary measures can be employed for prevention like maintainence of personal hygienic and sanitary conditions, intake of sufficient amount of liquid, ignorance of close contact with infected persons, and avoiding smoking.[78, 79] In addition, various drug therapies have been suggested to offer beneficial effects like analgesics, antibiotics, antiseptics, and herbal astringents.

1.7.4. Lower Respiratory Tract Infections (LRTIs)

Lower respiratory infections, such as pneumonia tends to be in a far more serious condition than upper respiratory infections, such as the common cold [80].Although some disagreement exists on the exact boundary between the upper and lower respiratory tracts

The lower respiratory tract consists of the

- trachea (wind pipe),
- bronchial tubes,
- the bronchioles and
- the lungs.[81]

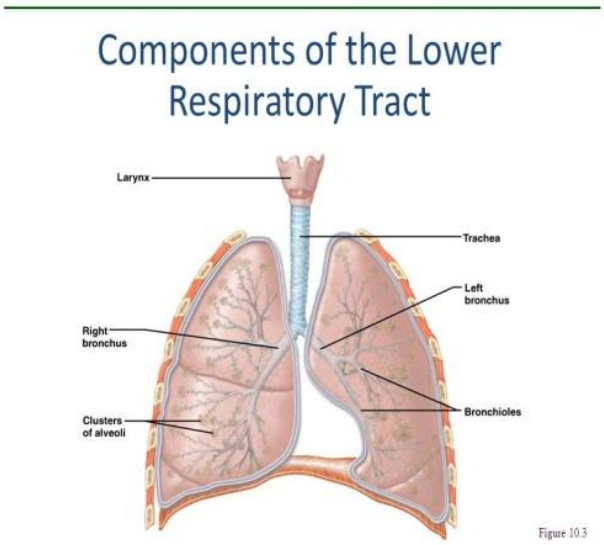


Figure – 1.5: The components of lower respiratory tract.

Lower respiratory tract infections are generally more serious than upper respiratory infections. LRIs have been the leading cause of death among all infectious diseases [80].Therefore, the two most common LRIs are bronchitis and pneumonia [82].Influenza affects both the upper and lower respiratory tracts, but more dangerous strains such as the highly pernicious H5N1 tend to bind tothe receptors deep in the lungs [83].

1.7.4.1. Virus causing most LRTIs includes

Rhinovirus, coronavirus, adenovirus, influenza A and B viruses, respiratory syncytial virus (RSV) and parainfluenza virus.

1.7.4.2. Different types of LRTIs

- flu (this can affect either the upper or lower respiratory tract),
- bronchitis (infection of the airways),
- pneumonia (infection of the lungs),
- bronchiolitis (an infection of the small airways that affects babies and children younger than two)
- tuberculosis (persistent bacterial infection of the lungs) [83].

1.7.4.3. Symptoms of LRTIs

The main symptom of a lower RTI is cough, although it is usually more severe and you may bring up phlegm and mucus. Other possible symptoms are a tight feeling in your chest, increased rate of breathing, breathlessness and wheezing.

1.7.5.1. Patient's concept for RTIs

Respiratory infection is also one of the major problems in the world [85]. The already studied survey prove that most of the persons used self-medication mainly for the treatment of respiratory tract infection illness such as common cold, cough, fever, etc[86]. Several different viruses can infect the respiratory tract and causes the common cold, cough, etc. colds usually resolve themselves in 1 to 2 weeks whether treated or not. It caused by many factors like environmental condition, pollution, microbial infection, sharing drinks, poor nutrition, lack of rest, alcohol use, smoking, inhaling saliva from infected persons, shaking hands, etc[87]. Health care members take steps to eradicate these types of problems. Especially pharmacists take special effort for solving these problems because they are last health care member to communicate with the patient.

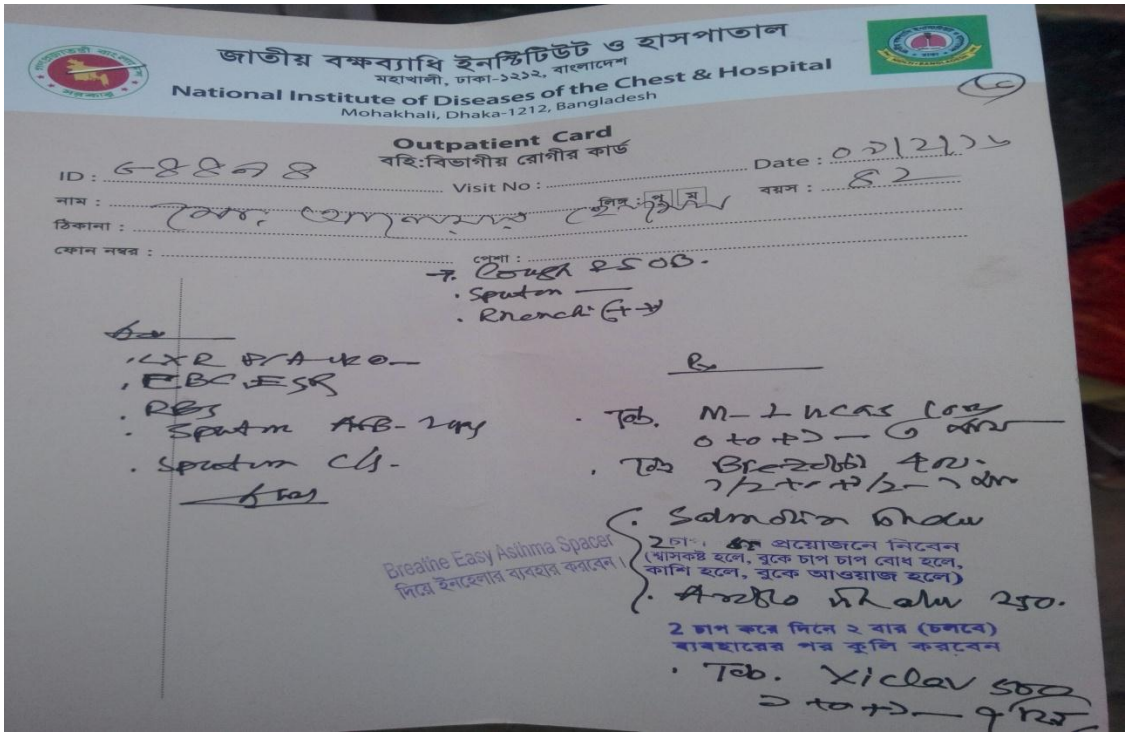


Figure 1.6: A prescription of ARI patient

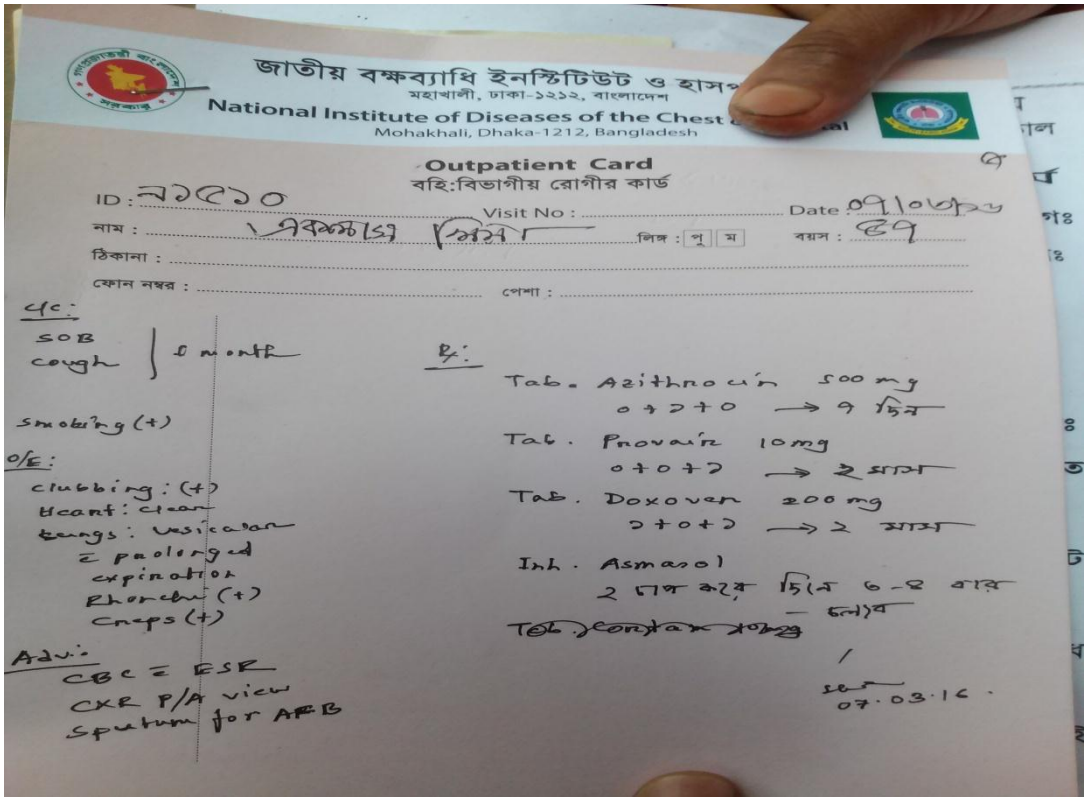


Figure 1.7: A Sample Prescription of ARI patient

1.7.6.1. Consultation rate for RTIs

A consultation rate just below 10% was found among women in UK aged 16–44 years with a cold, a flu or sore throat [88], whereas 25.4% of subjects reporting RTI in the Tecumseh study (USA) had consulted a doctor [89]. Among the 22% of an adult population who reported symptoms of RTI the last 2 weeks in a Dutch survey, 25% visited a general practitioner (GP) [90]. The consultation rate is higher for influenza than for common cold [89]. During the swine flu epidemic in the USA 2009–10, 8.1% of adults reported the "flu" in the last 30 days; among these 40% sought health care [91]. In Sweden, consultation rates for upper RTIs (URTIs) have shown a decline since 1999, but have remained unchanged for influenza and lower RTI [92]. Similar findings have been found in UK, based on patient records from general practices [51]. The decline in consultation rate has been explained by a more restrictive prescribing of antibiotics teaching patients that visit to the doctor are often unnecessary. The rate of prescribing antibiotics per RTI consultation has been rather stable in Sweden [92]. Notably in the UK, a decline in URTI related antibiotic prescribing was observed between 1997 and 2006 [92].

Chapter – 2

Methodology

2.1. Methodology

We selected ten teaching hospitals.

In Public Hospitals

Dhaka Medical College Hospital (DMCH),

1. Sir Salimullah Medical College (SSMC),
2. Bangladesh Sheikh Mujib Medical University (BSMMU),
3. Shoheed Suhoawardy Medical College Hospital (SSMCH),
4. National Institute of Diseases of the Chest and Hospital (NICDH)

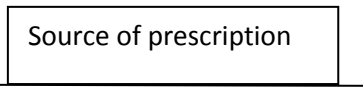
In Private Hospitals

1. Square Hospital Ltd (SH),
2. Popular Hospitals (PH),
3. Apollo Hospitals (AH),
4. United Hospitals (UH),
5. Labaid Specialized Hospitals (LSH)

As our research sites. These ten hospitals are the major hospitals of our country and a good number of patients come to these health facilities daily. As the immune system weakens are the main sufferers due to ARI diseases we confounded our research on all the people aged between 0 to 90 years.

Organogram of Data Collection sources from Public and Private Hospitals data for ARI

Table 2.1: Source of data collection from Public and Private Hospital

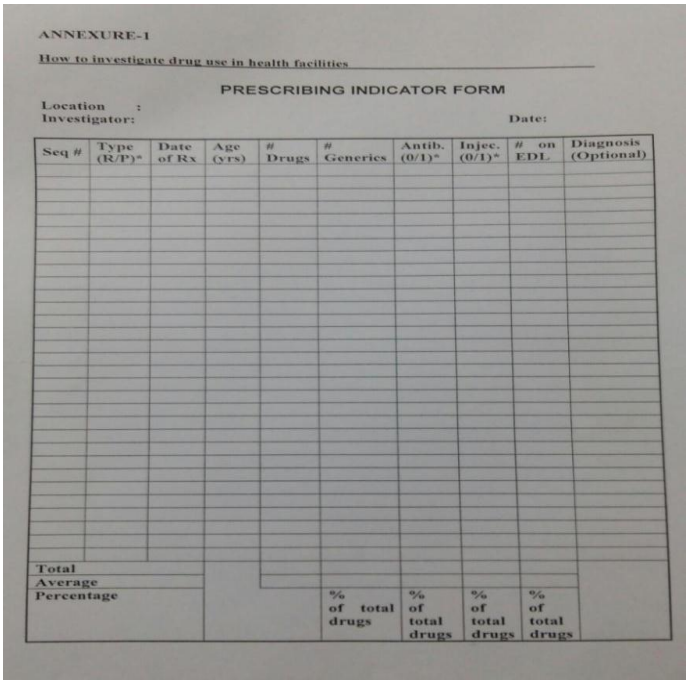


No. of Hospital	Before Intervention	After Intervention
DMCH	300	300
SSMC	300	300
BSMMU	300	300
SSMCH	300	300
NICDH	300	300

No. of Hospital	Before Intervention	After Intervention
SH	300	300
PH	300	300
AH	300	300
UH	300	300
LSH	300	300

Total number of 6000 data collection from public and private hospital for ARI

We decided to take 6000 prescriber-patient encounter data (prospective) each from the ten hospitals on the basis of a prepared format **(Annex.-1: Prescribing indicator form)**. This format contained the date of prescription, age distribution of the child, number of drugs prescribed, how many of them are generics, number of encounters receiving antibiotics, number of encounters receiving injections, number drugs from the essential drug list and the diagnosis.



ANNEXURE-1

How to investigate drug use in health facilities

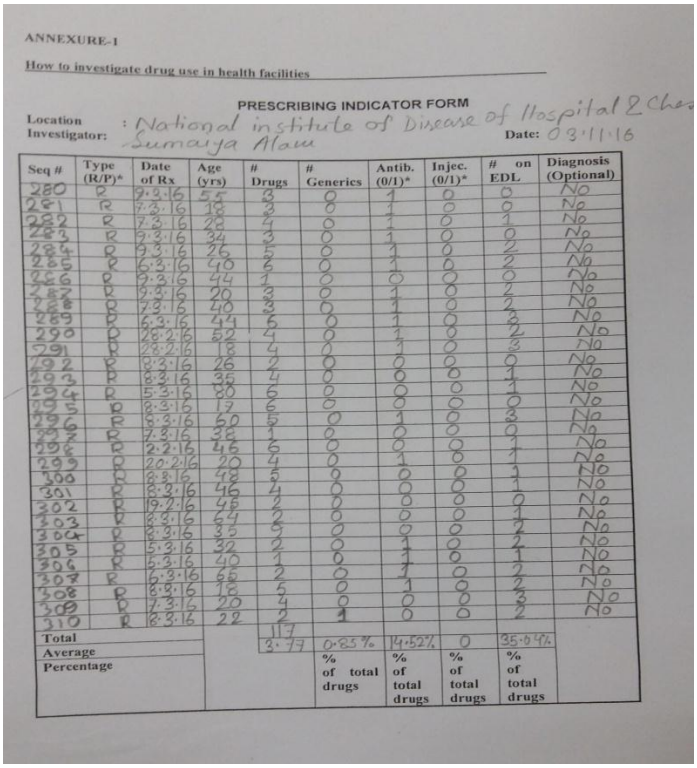
PRESCRIBING INDICATOR FORM

Location :
Investigator:

Date:

Seq #	Type (R/P)*	Date of Rx	Age (yrs)	# Drugs	# Generics	Antib. (0/1)*	Injec. (0/1)*	# on EDL	Diagnosis (Optional)
Total									
Average									
Percentage					% of total drugs	% of total drugs	% of total drugs	% of total drugs	

Figure 2.1.A: Image of a blank sample of Annex 1



ANNEXURE-I

How to investigate drug use in health facilities

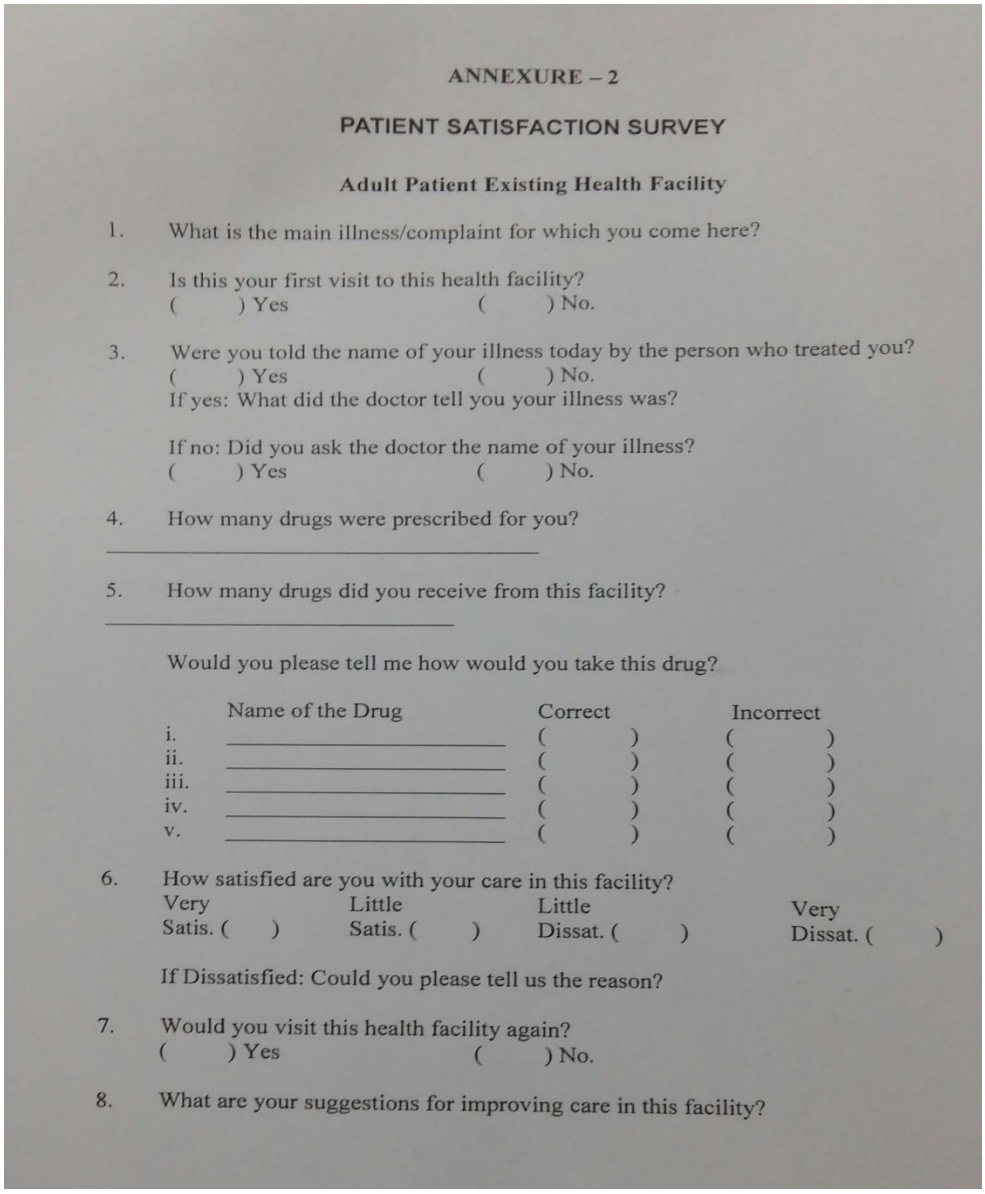
PRESCRIBING INDICATOR FORM

Location : National Institute of Disease of Hospital & Che...
Investigator: Sumaiya Alam
Date: 03.11.16

Seq #	Type (R/P)*	Date of Rx	Age (yrs)	# Drugs	# Generics	Antib. (0/1)*	Injec. (0/1)*	# on EDL	Diagnosis (Optional)
280	R	7.3.16	55	3	0	1	0	0	No
281	R	7.3.16	18	3	0	1	0	0	No
282	R	7.3.16	28	4	0	1	0	1	No
283	R	9.3.16	34	3	0	1	0	0	No
284	R	9.3.16	26	5	0	1	0	2	No
285	R	6.3.16	40	3	0	1	0	2	No
286	R	9.3.16	44	1	0	0	0	0	No
287	R	9.3.16	20	3	0	1	0	2	No
288	R	7.3.16	40	3	0	1	0	2	No
289	R	6.3.16	44	5	0	1	0	3	No
290	R	28.2.16	52	4	0	1	0	2	No
291	R	28.2.16	18	4	0	1	0	3	No
292	R	8.3.16	26	2	0	0	0	0	No
293	R	8.3.16	35	4	0	0	0	1	No
294	R	5.3.16	80	6	0	0	0	1	No
295	R	8.3.16	17	6	0	0	0	0	No
296	R	8.3.16	50	5	0	1	0	2	No
297	R	7.3.16	36	1	0	0	0	0	No
298	R	2.2.16	46	6	0	0	0	1	No
299	R	20.2.16	20	4	0	1	0	1	No
300	R	8.3.16	48	5	0	0	0	1	No
301	R	8.3.16	46	4	0	0	0	1	No
302	R	19.2.16	45	2	0	0	0	0	No
303	R	8.3.16	54	2	0	0	0	1	No
304	R	8.3.16	35	3	0	0	0	1	No
305	R	5.3.16	32	2	0	1	0	1	No
306	R	5.3.16	40	1	0	1	0	1	No
307	R	6.3.16	65	2	0	1	0	2	No
308	R	8.3.16	18	5	0	1	0	3	No
309	R	7.3.16	20	4	0	0	0	3	No
310	R	8.3.16	22	2	1	0	0	2	No
Total				117					
Average				3.77					
Percentage					0.85% % of total drugs	4.52% % of total drugs	0 % of total drugs	35.04% % of total drugs	

Figure 2.1.B: Image of a fill up sample of Annex 1

We also took 1500 prescriber-patient and 1500 pharmacist-patient encounter date (prospective) each from the ten hospitals on the basis of different questionnaire **(Annex.-2: Patient Satisfaction Survey)** to determine the different aspects of consulting time, dispensing time, number of drugs dispensed, extent of adequate labeling and patients knowledge about correct dosing.



ANNEXURE – 2

PATIENT SATISFACTION SURVEY

Adult Patient Existing Health Facility

1. What is the main illness/complaint for which you come here?

2. Is this your first visit to this health facility?
( ) Yes ( ) No.

3. Were you told the name of your illness today by the person who treated you?
( ) Yes ( ) No.
If yes: What did the doctor tell you your illness was?

If no: Did you ask the doctor the name of your illness?
( ) Yes ( ) No.

4. How many drugs were prescribed for you?
_____

5. How many drugs did you receive from this facility?
_____

Would you please tell me how would you take this drug?

	Name of the Drug	Correct	Incorrect
i.	_____	( )	( )
ii.	_____	( )	( )
iii.	_____	( )	( )
iv.	_____	( )	( )
v.	_____	( )	( )

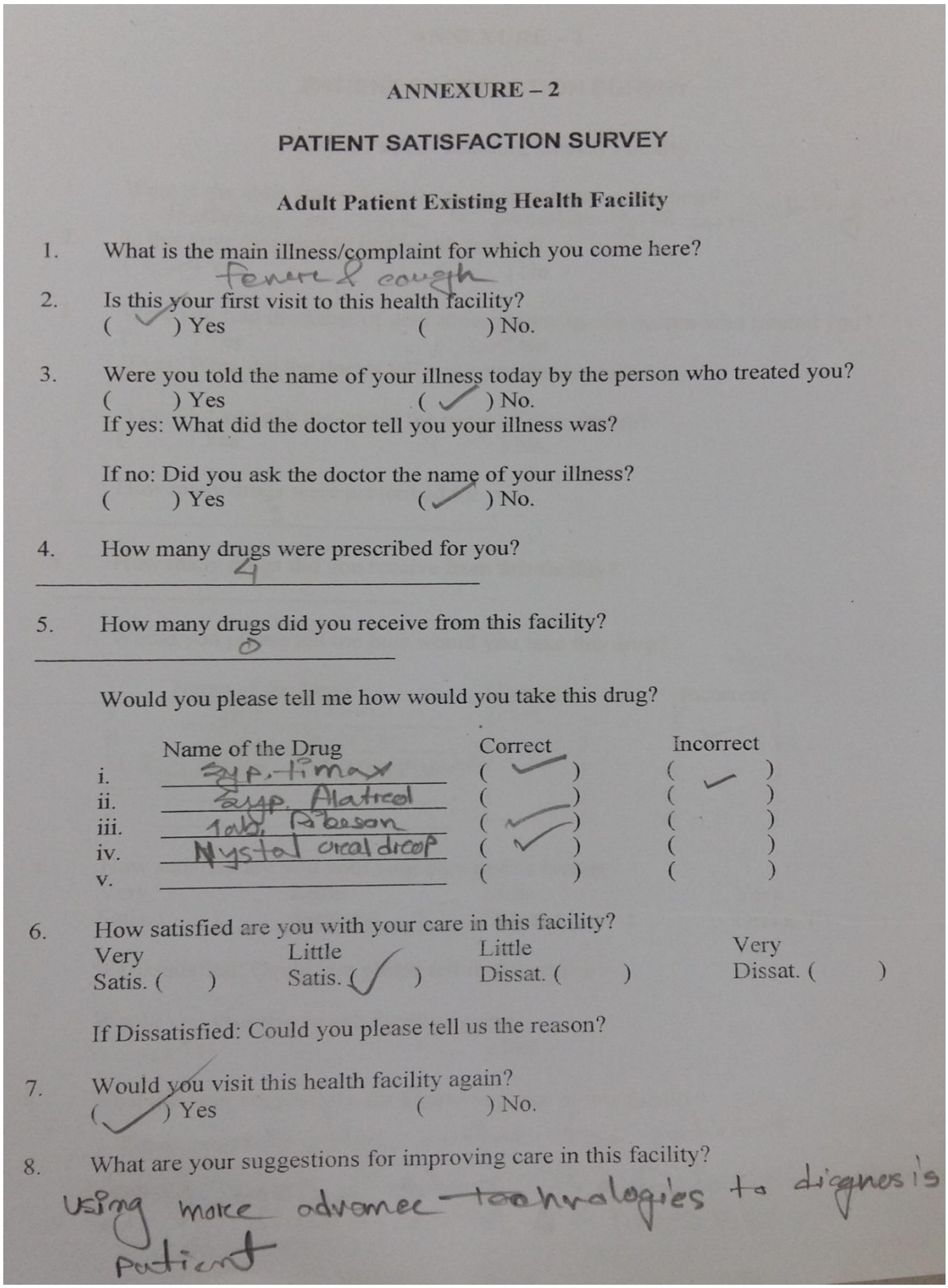
6. How satisfied are you with your care in this facility?
Very Satis. ( ) Little Satis. ( ) Little Dissat. ( ) Very Dissat. ( )

If Dissatisfied: Could you please tell us the reason?

7. Would you visit this health facility again?
( ) Yes ( ) No.

8. What are your suggestions for improving care in this facility?

Figure 2.1.C: ANNEXURE-2 (Patient Satisfactory Survey)



ANNEXURE – 2

PATIENT SATISFACTION SURVEY

Adult Patient Existing Health Facility

1. What is the main illness/complaint for which you come here?
fever & cough

2. Is this your first visit to this health facility?
(✓) Yes ( ) No.

3. Were you told the name of your illness today by the person who treated you?
( ) Yes (✓) No.
If yes: What did the doctor tell you your illness was?

If no: Did you ask the doctor the name of your illness?
( ) Yes (✓) No.

4. How many drugs were prescribed for you?
4

5. How many drugs did you receive from this facility?
0

Would you please tell me how would you take this drug?

	Name of the Drug	Correct	Incorrect
i.	Syp. Pimax	(✓)	(✓)
ii.	Syp. Alatrol	( )	( )
iii.	Tab. Disaan	(✓)	( )
iv.	Mystal oral drop	(✓)	( )
v.		( )	( )

6. How satisfied are you with your care in this facility?
Very Satis. ( ) Little Satis. (✓) Little Dissat. ( ) Very Dissat. ( )

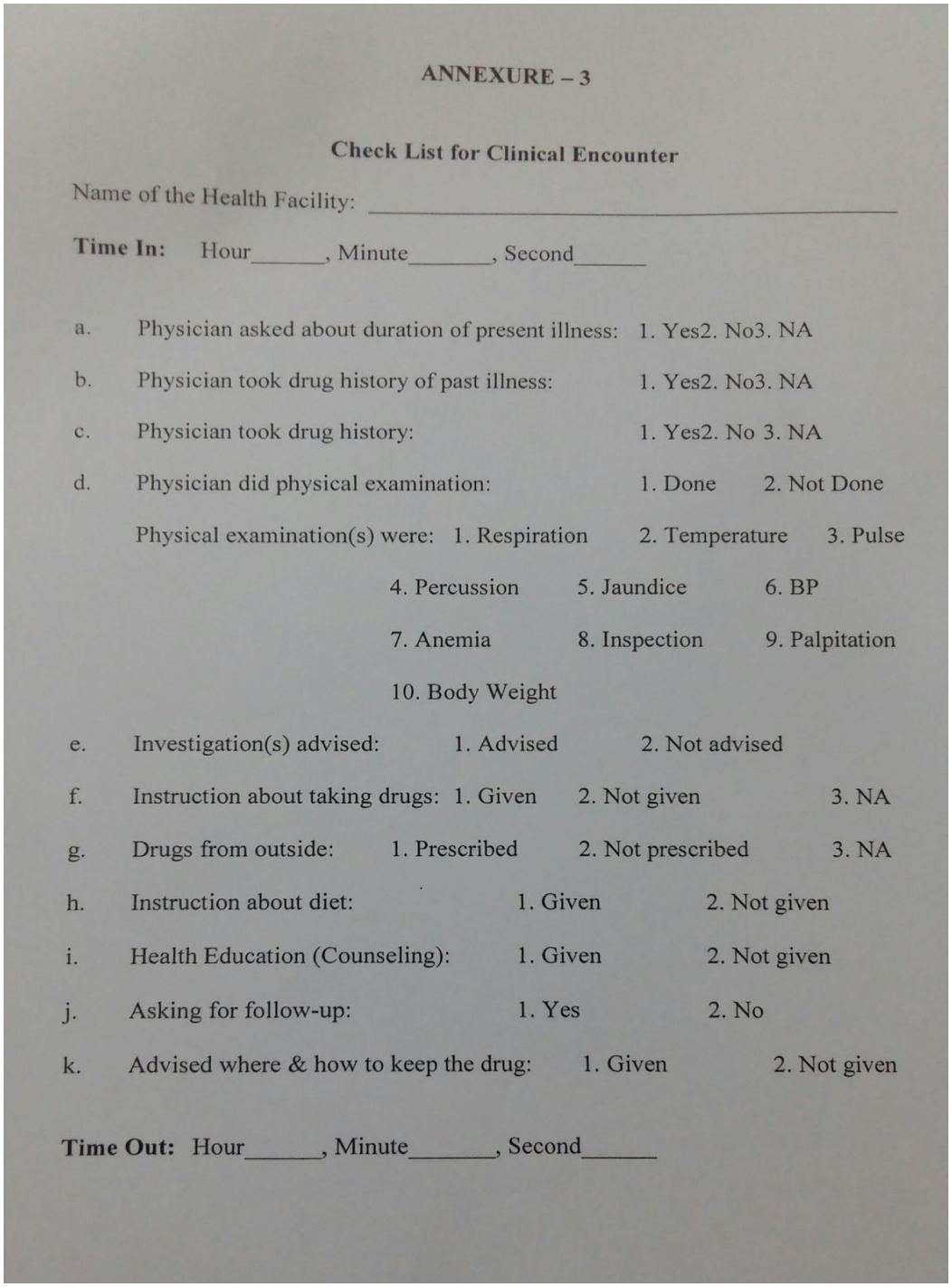
If Dissatisfied: Could you please tell us the reason?

7. Would you visit this health facility again?
(✓) Yes ( ) No.

8. What are your suggestions for improving care in this facility?
using more advance technologies to diagnosis patient

Figure 2.1.D: ANNEXURE-2 (Patient Satisfactory Survey)

We also checked a list (prospective) was used **(Annex.-3: Check List for Clinical Encounter)** for a total of 3000 patients to determine the pattern of encounters they had with their prescribers.



ANNEXURE – 3

Check List for Clinical Encounter

Name of the Health Facility: _____

Time In: Hour_____, Minute_____, Second_____

a. Physician asked about duration of present illness: 1. Yes2. No3. NA

b. Physician took drug history of past illness: 1. Yes2. No3. NA

c. Physician took drug history: 1. Yes2. No 3. NA

d. Physician did physical examination: 1. Done 2. Not Done

Physical examination(s) were: 1. Respiration 2. Temperature 3. Pulse
4. Percussion 5. Jaundice 6. BP
7. Anemia 8. Inspection 9. Palpitation
10. Body Weight

e. Investigation(s) advised: 1. Advised 2. Not advised

f. Instruction about taking drugs: 1. Given 2. Not given 3. NA

g. Drugs from outside: 1. Prescribed 2. Not prescribed 3. NA

h. Instruction about diet: 1. Given 2. Not given

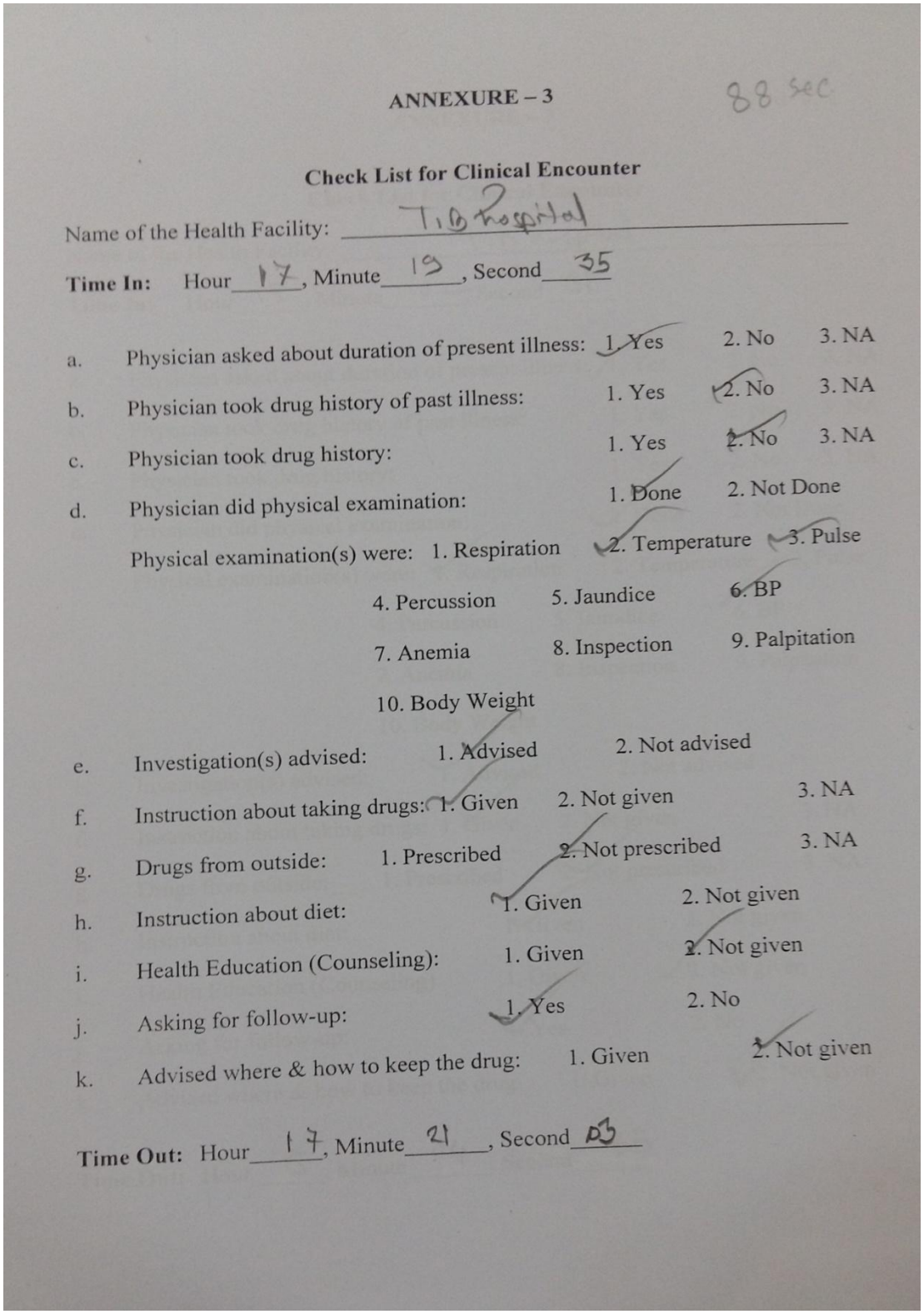
i. Health Education (Counseling): 1. Given 2. Not given

j. Asking for follow-up: 1. Yes 2. No

k. Advised where & how to keep the drug: 1. Given 2. Not given

Time Out: Hour_____, Minute_____, Second_____

Figure 2.1.E: ANNEXURE-3 (Check List for Clinical Encounter)



ANNEXURE – 3

88 sec

Check List for Clinical Encounter

Name of the Health Facility: T.B Hospital

Time In: Hour 17, Minute 19, Second 35

a. Physician asked about duration of present illness: 1. Yes 2. No 3. NA

b. Physician took drug history of past illness: 1. Yes 2. No 3. NA

c. Physician took drug history: 1. Yes 2. No 3. NA

d. Physician did physical examination: 1. Done 2. Not Done

Physical examination(s) were: 1. Respiration 2. Temperature 3. Pulse
4. Percussion 5. Jaundice 6. BP
7. Anemia 8. Inspection 9. Palpitation
10. Body Weight

e. Investigation(s) advised: 1. Advised 2. Not advised

f. Instruction about taking drugs: 1. Given 2. Not given 3. NA

g. Drugs from outside: 1. Prescribed 2. Not prescribed 3. NA

h. Instruction about diet: 1. Given 2. Not given

i. Health Education (Counseling): 1. Given 2. Not given

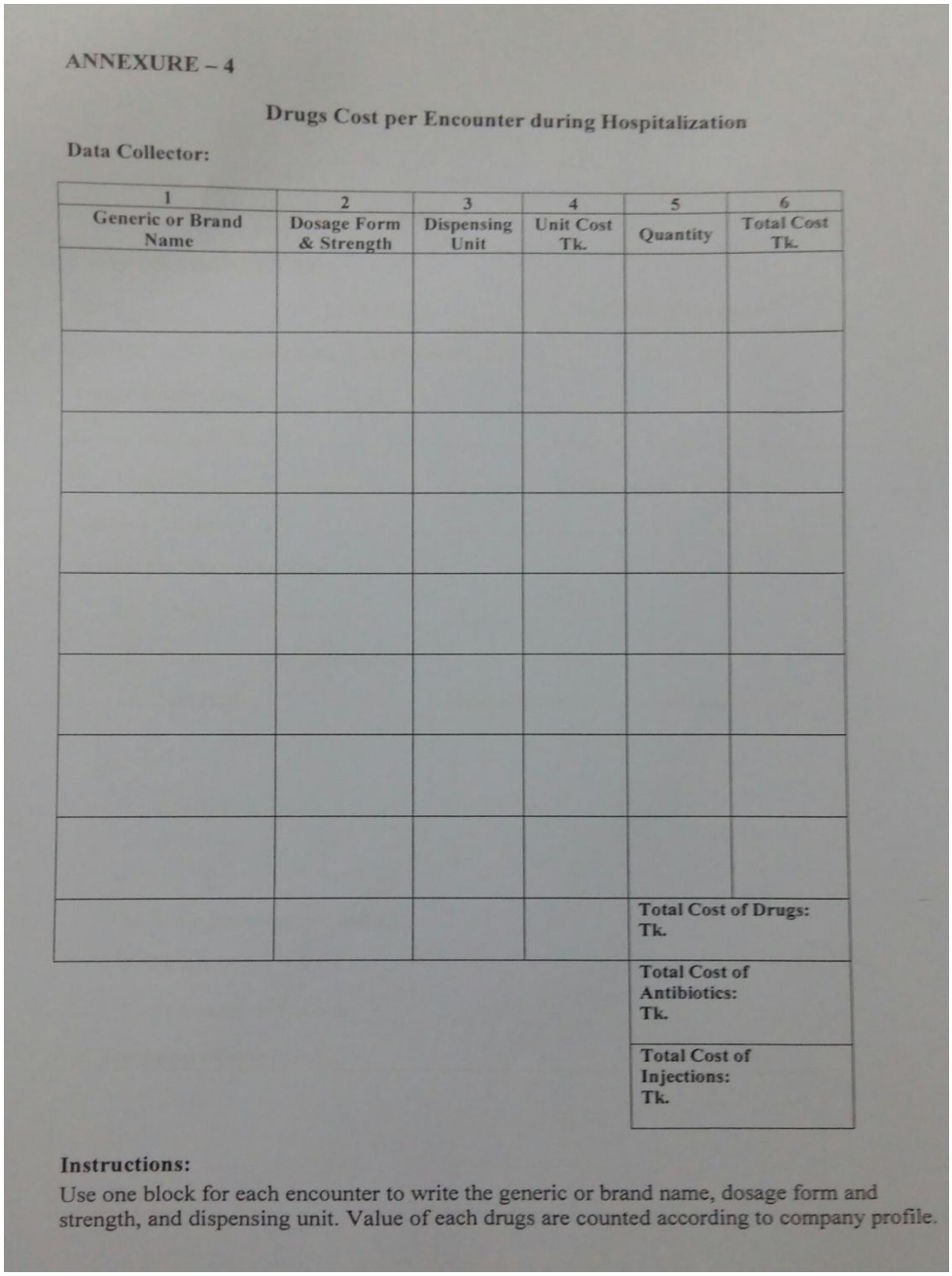
j. Asking for follow-up: 1. Yes 2. No

k. Advised where & how to keep the drug: 1. Given 2. Not given

Time Out: Hour 17, Minute 21, Second 03

Figure 2.1.F: ANNEXURE-3 (Check List for Clinical Encounter)

Moreover, drugs cost were also counted **(Annex.-4: Drugs Cost per Encounter during Hospitalization)** for a total 3000 patients to determine the pattern of cost they had with their prescribers.



ANNEXURE – 4

Drugs Cost per Encounter during Hospitalization

Data Collector:

1	2	3	4	5	6
Generic or Brand Name	Dosage Form & Strength	Dispensing Unit	Unit Cost Tk.	Quantity	Total Cost Tk.
				Total Cost of Drugs: Tk.	
				Total Cost of Antibiotics: Tk.	
				Total Cost of Injections: Tk.	

Instructions:

Use one block for each encounter to write the generic or brand name, dosage form and strength, and dispensing unit. Value of each drugs are counted according to company profile.

Figure 2.1.G: ANNEXURE-4 (Drugs Cost per Encounter during Hospitalization)

ANNEXURE – 4

Drugs Cost per Encounter during Hospitalization

Data Collector: Wahida Binte Zahir

1 Generic or Brand Name	2 Dosage Form & Strength	3 Dispensing Unit	4 Unit Cost Tk.	5 Quantity	6 Total Cost Tk.
Ricofast	Tablet 250mg	1000mg	25	20	500
Ema	Tablet 20mg	40mg	5	60	300
Cef 3-DS	Tablet 200mg	400mg	50	10	500
Spirocard	Tablet 25mg	100mg	5	120	600
Disys	Tablet 80 mg	40mg	10	15	150
Telukast	Tablet 10mg	10mg	4	30	120
Clogril plus	Tablet		11	30	330
Lipicon	Tablet 20mg	20mg	18	30	540
				Total Cost of Drugs: Tk. 3040	
				Total Cost of Antibiotics: Tk. 500	
				Total Cost of Injections: Tk. 0	

Instructions:
Use one block for each encounter to write the generic or brand name, dosage form and strength, and dispensing unit. Value of each drugs are counted according to company pr

Figure 2.1.H: ANNEXURE-4 (Drugs Cost per Encounter during Hospitalization)

We decided to take another sets of data with same number of samples after an intervention using the same formats and questionnaires.

We took the program as a pilot project, and after analyzing the situation and the success of intervention the program can be expanded gradually from district hospitals to thana health complexes which will create a nationwide effective ARI management system.

2.1.1. Data Collection

On the basis of prepared questionnaires we collected data from the outdoor patients. Our point of interest was:

- Age of the patients,
- Number of drugs per prescription,
- Number of drugs prescribed by generic name,
- Presence of antibiotics,
- Presence of injections,
- Number of drugs from EDL(Essential Drug List)
- Diagnosis,
- Consulting time per patient,
- Dispensing time per patient,
- Number of drugs dispensed per prescription,
- Number of labeled drugs per dispensed drugs,
- Number of patients having correct knowledge of dose,
- Number of patients having diet education,
- Number of patients having health education,
- Number of patients asking for follow-up
- Number of patients asked for duration of illness, past history or drugs history,
- Number of patients undergoing physical examination,
- Number of patients satisfied or dissatisfied with the health facility,
- Number of patients getting dosing instruction,
- Number of patients advised for investigation,
- About patient hearing, was it adequate or fair or little.

2.1.2. Data Entry and data analyzing

After entering the data into the computer and then by using MS OFFICE 97 which is recent version including MS Word and Excel, all the data were analyzed.

2.1.3. Data Presentation

Results are presented in different approaches using pie chart, bar diagram, line diagram, area diagram, cylinder chart, columns and different tables.

2.1.4. Decision Making For Intervention

We collected 3000 prescriptions from Public Medical Hospitals and 3000 prescriptions from Private Medical Hospitals. In these 6000 Prescriptions are collected data have two parts. Those are before intervention and after intervention. In this way we collected before intervention 1500 prescription and after intervention 1500 prescription from Public Hospital. Another 3000 prescription collected in the same way from Private Hospital.

The prescribers from out-door geriatric departments of the ten hospitals were selected for possible interventions. Considering the merits and demerits of the educational, managerial and regulatory strategies of intervention, a combination of these three were planned, as per the design of the earlier international researchers.

A standard treatment guideline for ARI was available with both the prescriber groups. Their education and training also were sufficient to deal with the ARI problems. Thus the target group was homogenous. Both the setting was urban and the same city. Both were also government owned.

After examining all the factors an Informal Group Discussion (IGD) was selected as the intervention programme. It was expected that this the prescribers and pharmacists (separately as two target groups) behave in the manner as they did previously. Once the items were identified, remedial interactions became easier. Moreover, the Informal Group Discussion (IGD) are quick, inexpensive and prescribers and pharmacists have been enjoying.

The Informal Group Discussion was designed in such a way that a group of senior physicians and pharmacists, who are teachers, would meet their corresponding colleagues to exchange ideas about the scientific approaches, feelings and beliefs.

2.2. Method

2.2.1. Physician-Physician IGD

Senior medical teachers initiated a moderated informal discussion about ARI treatment and updated information about the topic was provided. 6-8 geriatric prescribers in 2 groups separately in ten hospitals attend this.

This was done during the mid-day break and each lasted for about 2 hours. The conversation was no recorded and no other personnel other than the selected teachers and prescribers were allowed to attend. The points for discussion were pre-distributed amongst the teachers.

Measures were taken so that there was one moderator amongst the teachers and everyone participated in the discussion focused and in-depth lively discussion was held. In both the hospitals, the venue was one of the senior physician's office rooms.

Thus a mixed educational, managerial and regulatory strategy was follow for this intervention.

2.2.2. Pharmacist-Pharmacist IGD

The pharmacist in charge of the hospital dispensaries were likewise invited to attend the other sessions of Informal Group Discussion in the same premise after the working hours. Senior pharmacy teachers were present in the session as moderates and in each session 4-5 diploma pharmacists attending the dispensaries were present. The session 4-5 diploma lasted for 2 hours each.

These informal sessions discussed the situation the situation of drug supply and stocks. The need for dispensing with separate packaging, separate labeling, making the patient understand the right dose, timing schedule and safe keeping in the household.

The conversations were not recorded and any other personnel were not allowed. Every participant shared the informal discussion and discussion points were pre-distributed amongst the teachers.

Thus the pharmacist-pharmacist Informal Group Discussion was mixed educational, managerial and regulatory strategy for this homogeneous group.

Both the type of IGDs was all participated and the moderators skillfully conducted the sessions. None distorted or exaggerated the feelings of the participants and no one dominated the discussions also.

Thus the methodology for intervention reflected and accommodated the scopes strengths and weakness of the intervention strategy.

2.3. Post-Intervention Study

2.3.1. Preparation

After an informal intervention with the prescribers and pharmacists, there was another survey two weeks later. Another set of data with the same number of samples after the intervention using the same formats and questionnaires were collected.

2.3.2. Methodology

The methodology used for post-intervention study was the same as used for the pre-intervention study as stated in the section 3.1.2. The factors considered and the sample sizes were also the same.

2.3.3. Data Collection

Data were collected using the same framework and questionnaires on the same points previously stated on section 3.1.3.

2.3.4. Data Entry and Data Analyzing

Data were entered in computer and analyzed the data using the same MS OFFICE 97 Program.

2.3.5. Data Presentation

Different types of charts (pie, line, column, bar, area etc) and tables were used to present the post post-intervention findings

Chapter 3

Results and Discussion

3 Results and Discussion

Various major finding and parameters regarding prescription patterns are demonstrated in tables and respective graphs below:

3.1 Age distribution of ARI patients

It was seen that all patients regardless the age limit are the most common victims of ARI. However, all age groups are at risk. But In both Public and Private sectors 25% and 23% of the total patients less than 2 years of age, and the percentage of the patients less than of age 5 years are most prone to ARI. Age from 5 to 18 years in both public hospitals and private hospitals are quite low that is 21% and 14% respectively. Similarly age above 18 t years in public sector who is suffering from ARI is 2% which is low than the private sectors having 13% ARI patients. This is shown in the following Table 4.1A and Figure 4.1a. This is shown in the following Table 3.1 A and Figure 3.1 a.

Table 3.1 A: Age distribution of ARI patients

	Patients of less than 2 years of age	Patients less than 5years of age	Patients of 5-18 years of age	Patients of >18 years of age
Public	25%	32%	21%	22%
Private	23%	50%	14%	13%

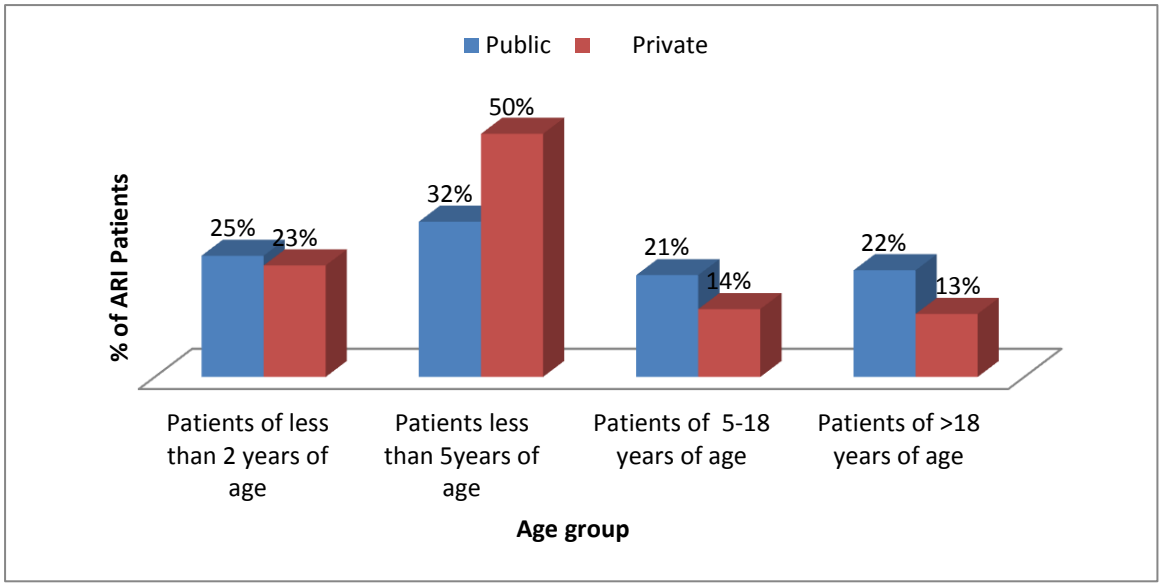


Figure 3.1 a: % age group of ARI Patient

3.2 ARI treatment pattern by age group

Different groups of drugs are prescribed in case of ARI patients. A combination of drugs is used where antibiotics, analgesics, antipyretic and bronchodilators are most common. Antihistamines, vitamins and minerals are also prescribed. Patients with other complications are prescribed with different specific drugs like anthelmintics, antidiarrhoeals, antifungals etc. In Public sector patient less than 2 years having a number of 483 antibiotics prescribed which is lower than private sector (drug number 498) because high number of antibiotic prescribed in private sector before intervention. After intervention antibiotics prescribed become lower than before intervention. Among other drugs bronchodilators and Vitamins and Minerals occupy the second and third highest position respectively for prescribing. But in public the frequency of analgesics and vitamins & minerals is use in higher. The treatment pattern of different age groups regarding before and after intervention and number of total drugs are for both public and private sectors are showed in Table 3.2A, 3.2B, 3.2C, 3.2D and in Figure 3.2a, 3.2b, 4.2c, 3.2d. It was seen that after intervention total number of drugs is slightly decreased both in public and private sectors.

Table 3.2.A: ARI treatment pattern by age group in public sector before intervention (n=1500)

	Less than 2 years	2-5 years	5 -18 years	>18 years
Antibiotics	483	791	398	189
Analgesics	278	436	190	109
Antihistamines	190	378	229	156
Bronchodilators	209	329	249	110
Vitamins & minerals	378	556	250	150
Others	91	212	51	46

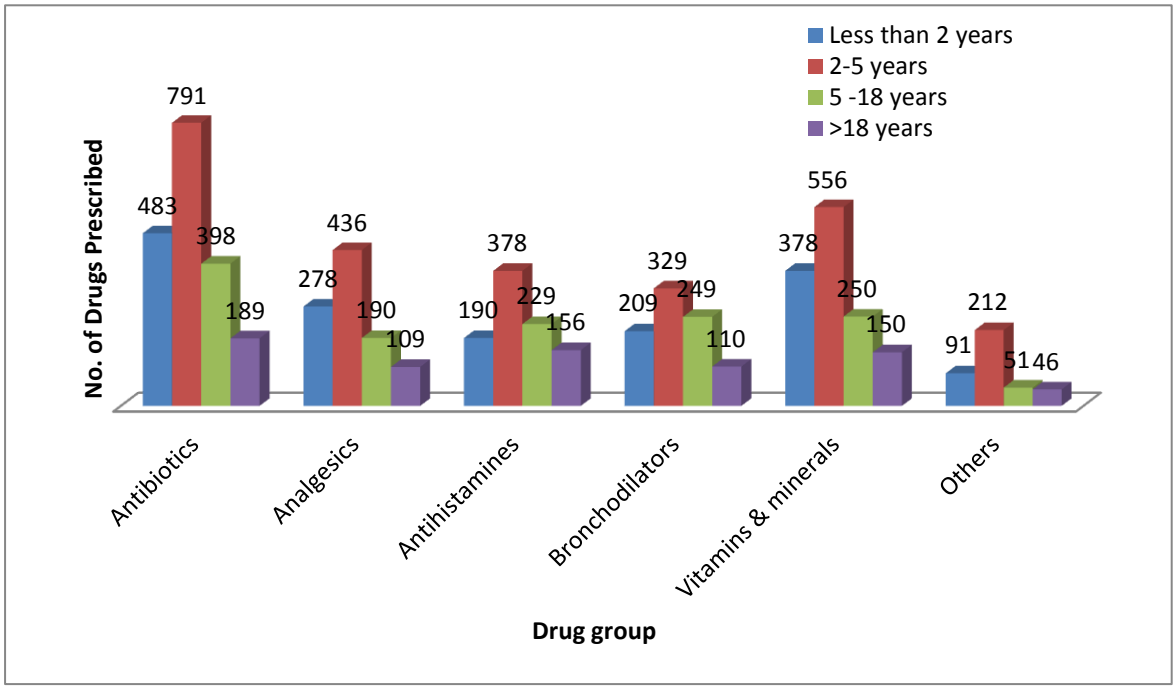


Figure 3.2 a: ARI treatment pattern by age group at public hospitals

(Before intervention)

Table 3.2 B: ARI treatment pattern by age group in public sector after intervention (n= 1500)

	Less than 2 years	2- 5 years	5- 18 years	>18 years
Antibiotics	256	490	210	130
Analgesics	386	656	235	158
Antihistamines	190	332	201	140
Bronchodilators	256	319	240	103
Vitamins & minerals	186	150	120	56
Other	13	39	20	27

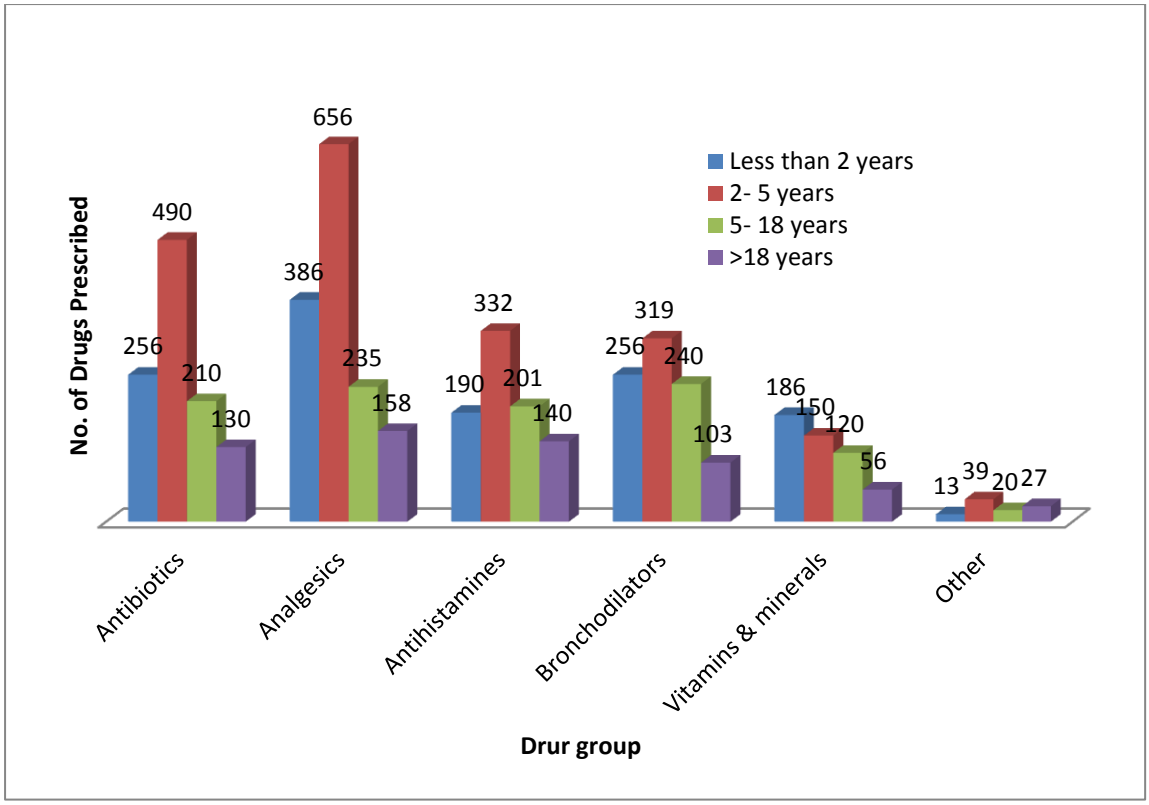


Figure 3.2B: ARI treatment pattern by age group at public hospitals

(After intervention)

Table 3.2.C: ARI Treatment Pattern by age group in private sector (before intervention)

	Less than 2 years	2- 5 years	5- 18 years	>18 years
Antibiotics	498	1149	495	225
Analgesics	323	778	277	211
Antihistamines	272	453	359	198
Bronchodilators	412	1049	400	220
Vitamins & minerals	453	1103	417	201
Other	121	256	149	194

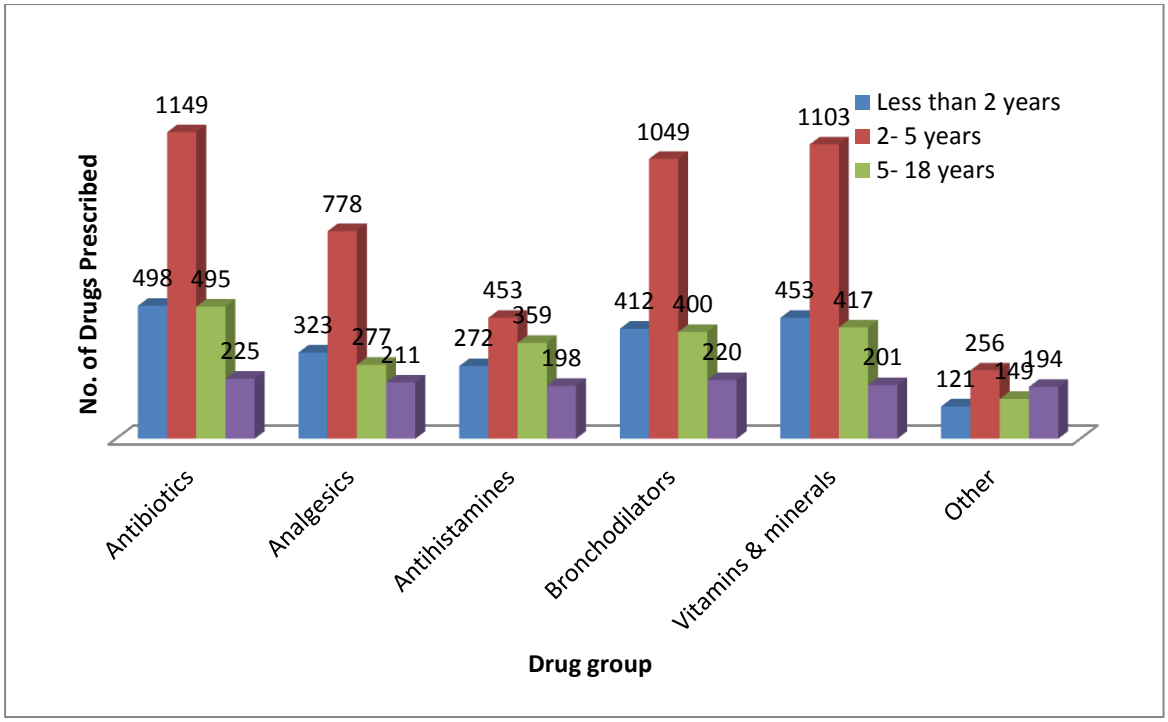


Figure 3.2.c: ARI Treatment pattern by Age Group in Private Hospitals

(Before Intervention)

Table 3.2.D: ARI Treatment Pattern by Age Group in private sector (after intervention)

	Less than 2 years	2- 5 years	5- 18 years	>18 years
Antibiotics	401	1108	480	220
Analgesics	302	656	270	201
Antihistamines	283	450	349	197
Bronchodilators	398	1010	387	215
Vitamins & minerals	389	1098	409	198
Other	104	249	130	159

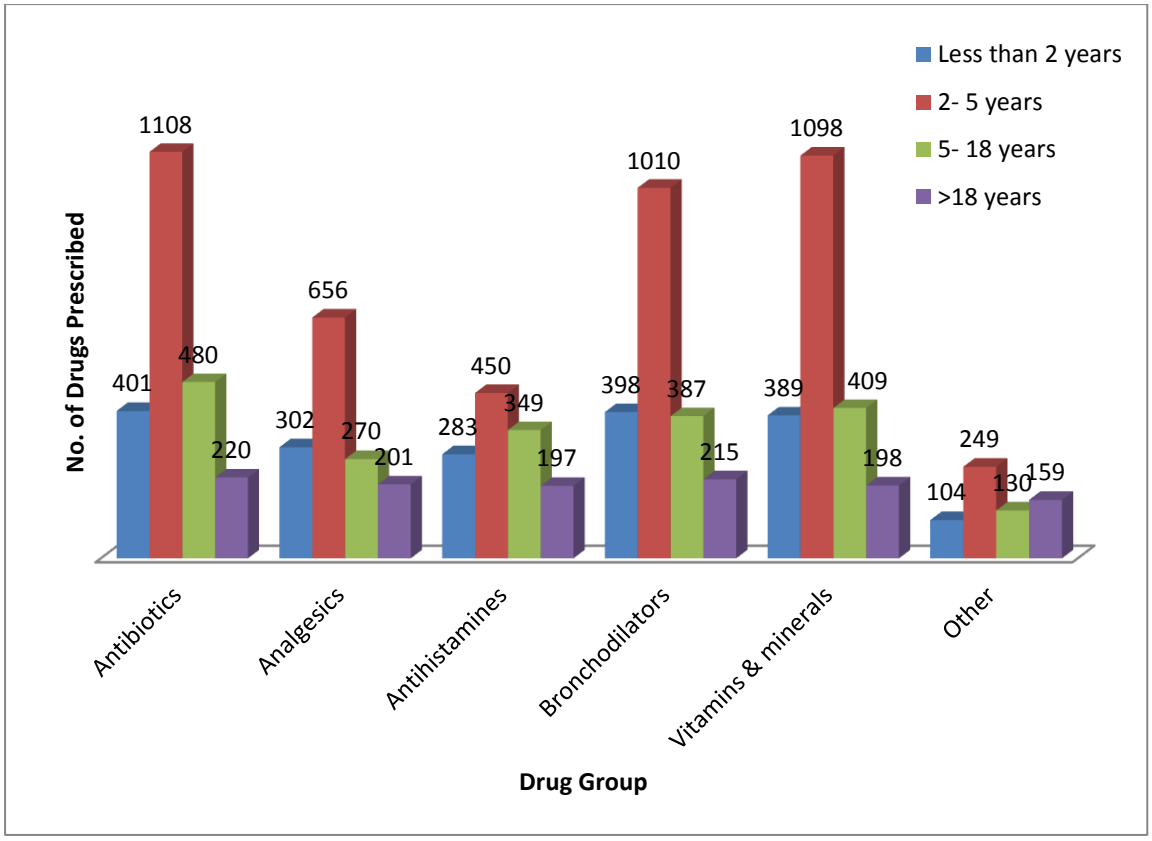


Figure 3.2.d. ARI treatment pattern by age group in private hospitals (After Intervention)

3.3 No. of drugs per case of ARI by age groups

The total number of patients of less 18 years and more than 18 years in public sectors was 0% for using of, 'no drug' for ARI treatment before intervention and after intervention more than 18 years age use 'no drug, only 1%. And private sectors less than 5 years and less than 18 years used 'no drug' 0% before intervention and after intervention it was 2% and 4%.

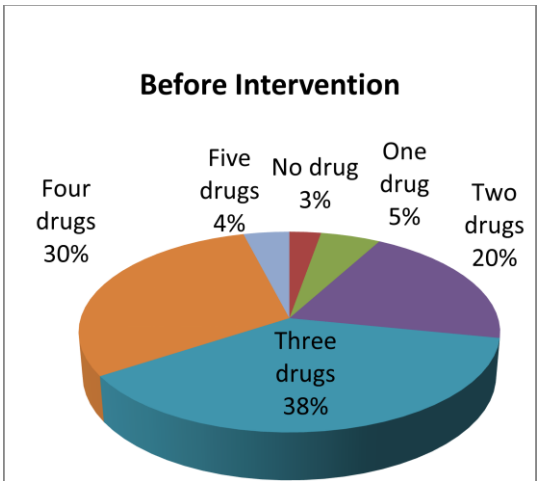
All data have been indicated both in tables and graphs showed Tables 3.3.1A, 3.3.2A, 3.3.3A, 3.3.4A, 3.3.5A, 3.3.6A, 3.3.7A, 3.3.8A and Figures 3.3.1a(i), 3.3.1a(ii), 3.3.2a(i), 3.3.2a(ii), 3.3.3a(i),4.3.3a(ii), 3.3.4a(i), 3.3.4a(ii), 3.3.5a(i), 3.3.5a(ii), 3.3.6a(i), 3.3.6a(ii), 3.3.7a(i), 3.3.7a(ii), 3.3.8a(i), 3.3.8a(ii).

3.3.1 Less than 2 years of age in public sector

In public sectors only 2.76% patients having less than 2 years received "no drugs", 5.27% patient received "1 drug", 20.10% patient received "2 drugs", 37.68% patient received "3 drugs", 30.15% patient received "4 drugs" and 4% patient received "5 or above drugs" before intervention. After intervention it is decreased of "4 drugs" and "5 drugs or above" to 23.42% and 2.28% respectively which is shown in Table 3.3.1A. And Figure 3.3.1a.

Table 3.3.1 A: No. of drugs per case of ARI patients by age group less than 2 years (public sector)

Number of Drugs	Before Intervention		After Intervention	
	No. of Cases	%	No. of Cases	%
No drug	11	2.76%	17	4.87%
One drug	21	5.27%	32	9.14%
Two drugs	80	20.10%	72	20.57%
Three drugs	150	37.68%	140	40%
Four drugs	120	30.15%	81	23.42%
Five drugs	16	4%	8	2.28%



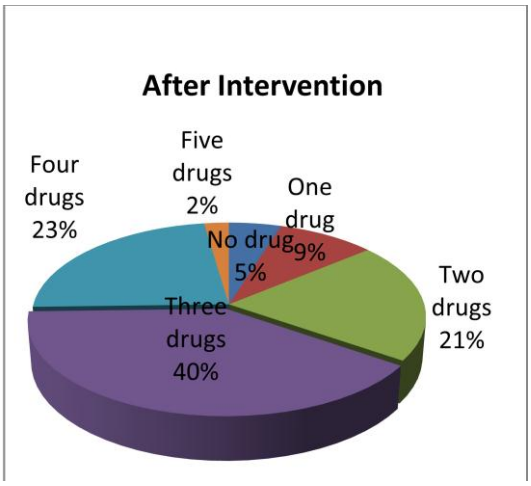


Figure 33.1.a (I): No. of Drugs ((<2 yrs)

Figure 3.3.1. a(II): No. of Drugs per Case (<2yrs)

3.3.2 Less than 5 years of age in public sector

In public health care sectors the tendencies of receiving multiple numbers of drugs in patients having less than 5 years are shown In **Table 3.3.2A:** and **Figure 3.3.2a**. It was seen that before intervention and after intervention patient having "5 drugs or more" is 2%. Surprisingly there is no change after intervention of those patients received "5 or more than 5 drugs" and it was 2%.

Table 3.3.2.A: No. of drugs per case of ARI patients by age group less than 5 years (public sector)

	Before Intervention		After intervention	
	No. of Cases	%	No. of Cases	%
No drug	5	1%	16	3.98%
One drug	30	5.37%	31	8.45%
Two drugs	120	21.42%	104	26%
Three drugs	270	48.21%	197	49%
Four drugs	126	22.5%	42	10.4%
Five drugs	9	2%	10	2%

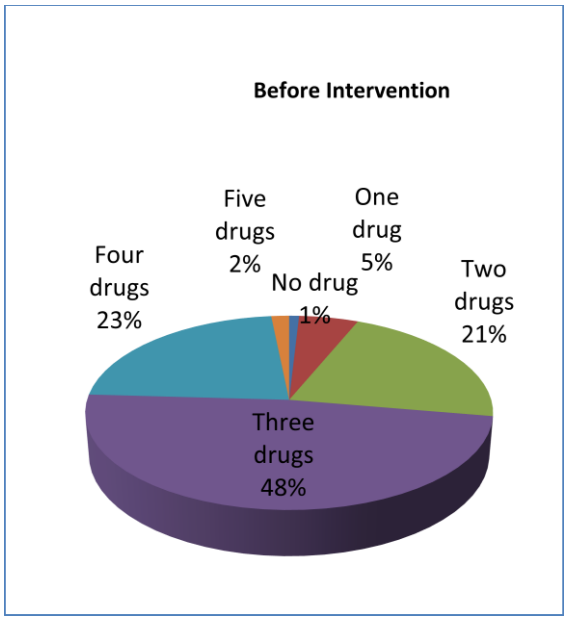


Figure 3.3.2.a (I): No. of Drugs per Cases (<5 yrs)

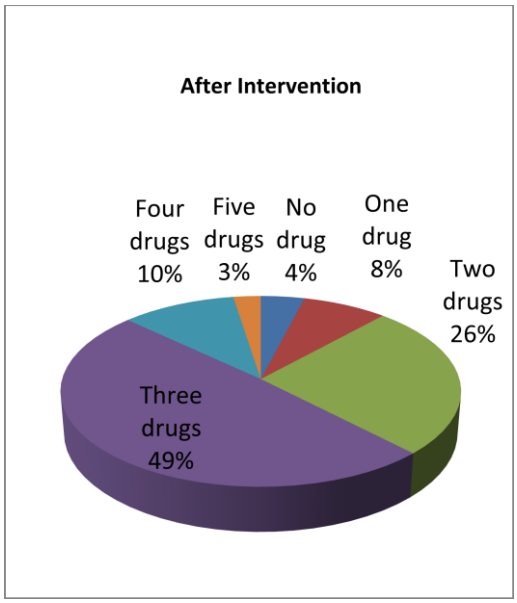


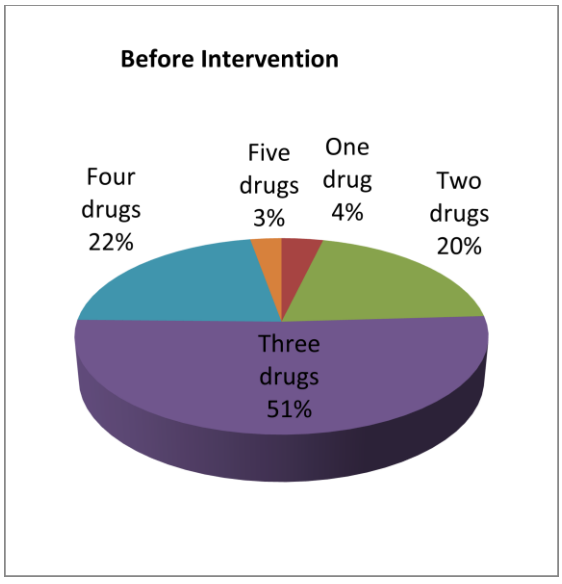
Figure 3.3.2a (II): No. of Drugs per Cases (<5 yrs)

3.3.3 Less than 18 years of age in public sector

In public health care sectors the tendencies of receiving multiple numbers of drugs in patients having less than 18 years are shown In Table 3.3.3A: and Figure 3.3.2a. It was seen that before intervention patient having “one drug” is 4%, “2 drugs” is 20%, “3 drugs” is 51.25%, “4 drugs” is 22% and “5 drugs or above” is 9% . After intervention “2 drugs “and “3 drugs” use is increased which is 25% and 53% respectively but other are decreased.

Table 3.3.3 A: No. of drugs per case of ARI patients by age group less than 18 years (public sector)

	Before Intervention		After intervention	
	No. of Cases	%	No. of Cases	%
No drug	0	0%	0	0%
One drug	12	4%	18	6%
Two drugs	65	20%	76	25%
Three drugs	164	51.25%	160	53%
Four drugs	70	22%	40	13%
Five drugs	9	3%	6	2%



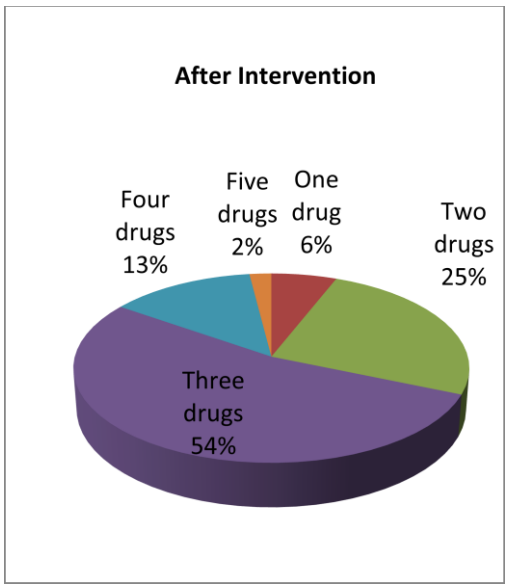


Figure 3.3.3.a (I): No. of Drugs/Cases (<18 yrs)

Figure 3.3.3.a (II): No. of Drugs/Cases (<18yrs)

3.3.4 Above 18 years of age in public sector

Patients having ARI age more than 18 years intake “2 drugs” and “3 drugs” before intervention is 21%, 53%which showed increase and it was 30% and 56% after intervention. But other cases before intervention “no drug”, “4 drugs” and “5 drugs or above” is 0%, 20%, 2% and after intervention 1%, 8%, 1.21% respectively which is decreased. And in case of “one drug” it was 4% and it is same after and before intervention.

Table 3.3.4 A: No. of drugs per case of ARI patients by age group > 18 years (public sector)

	Before Intervention		After intervention	
	No. of Cases	%	No. of Cases	%
No drug	0	0%	4	1%
One drug	14	4%	13	4%
Two drugs	72	21%	97	30%
Three drugs	180	53%	185	56%
Four drugs	66	20%	27	8%
Five drugs	8	2%	4	1.21%

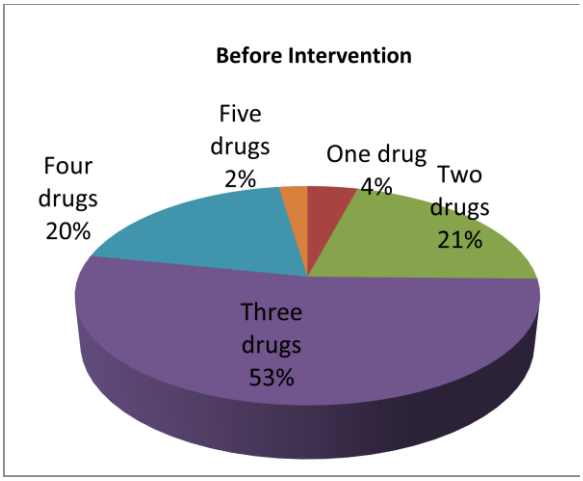


Figure 33.4 a(I): No. of Drugs/Cases (>18yrs)

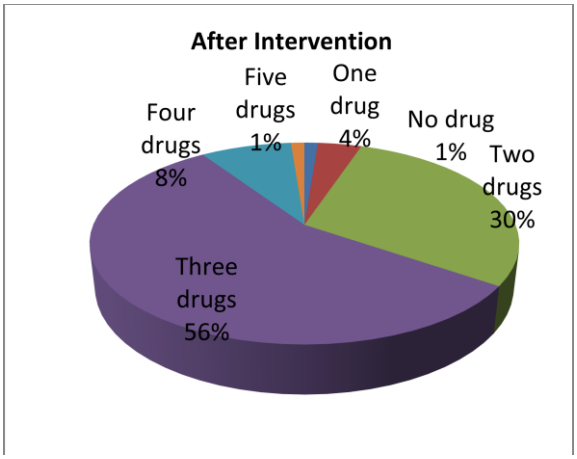


Figure 3.3.4.a(I): No. of Drugs/Cases (>18 yrs)

3.3.5 Less than 2 years of age in private sector

In private sectors only 1% patients having less than 2 years received "no drugs", 4% patient received "1 drug", 30% patient received "2 drugs", 34.25% patient received "3 drugs", 26% patient received "4 drugs" and 5% patient received "5 or above drugs" before intervention. After intervention it is decreased of "4 drugs" and "5 drugs or above" to 5% and 2% respectively which is shown in Table 3.3.5 A and Figure 3.3.5a.

Table 3.3.5 A: No. of drugs per case of ARI patients by age group less than 2 years (private sector)

	Before Intervention		After intervention	
	No. of Cases	%	No. of Cases	%
No drug	4	1%	9	3%
One drug	17	4%	23	8%
Two drugs	120	30%	109	39%
Three drugs	137	34.25%	120	43%
Four drugs	103	26%	14	5%
Five drugs	19	5%	5	2%

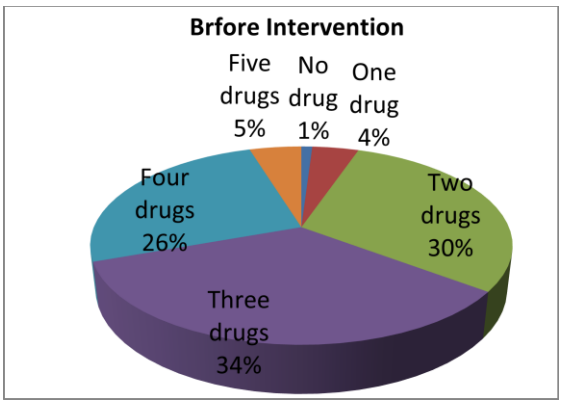


Figure 3.3.5 a (I): No. of Drug Cases (<2yrs)

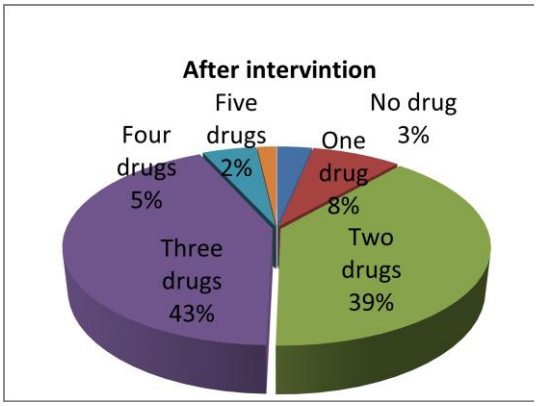


Figure 3.3.5 Aa(II): No. of Drug Cases (<2 yrs)

3.3.6 Less than 5 years of age in private sector

In public health care sectors the tendencies of receiving multiple numbers of drugs in patients having less than 5 years are shown In **Table 3.3.6A:** and **Figure 3.3.6a**. It was seen that before intervention patient having "4 drugs" is 28% and "5 drugs or above" is 9% which is decreased after intervention, it was 18% and 3%.

Table 3.3.6.A: No. of drugs per case of ARI patients by age group < 5 years (private sector)

	Before Intervention		After intervention	
	No. of Cases	%	No. of Cases	%
No drug	0	0%	14	2%
One drug	31	4%	52	7%
Two drugs	187	23%	190	27%
Three drugs	295	36%	295	42%
Four drugs	226	28%	130	18%
Five drugs	71	9%	20	3%

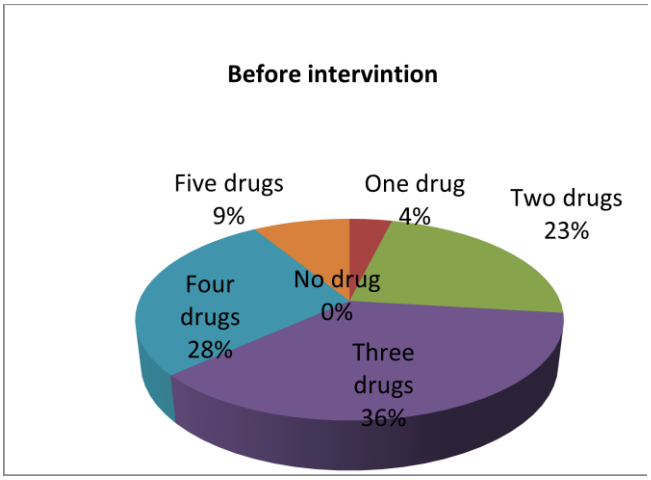


Figure 3.3.6 a(I): No. of Drug Cases (<5 yrs)

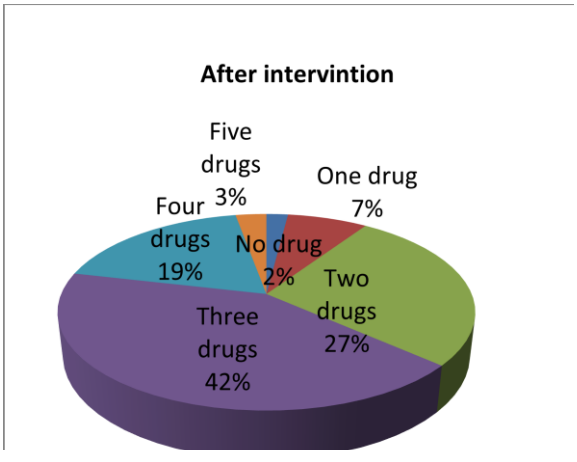


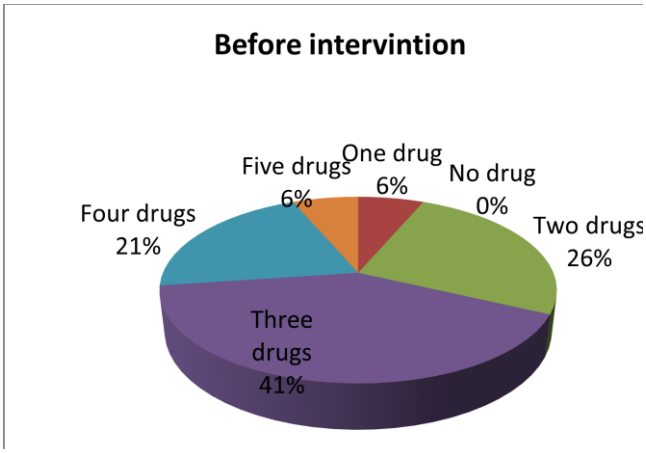
Figure 3.3.6a(II): No. of Drug Cases (<5 yrs)

3.3.7 Less than 18 years of age in private sector

In public health care sectors the tendencies of receiving multiple numbers of drugs in patients having less than 18 years are shown In Table 4.3.2A: and Figure 4.3.2a. It was seen that before intervention patient having “one drug” is 6%, “2 drugs” is 26%, “3 drugs” is 41%,“4 drugs” is 21% and “5 drugs or above” is 6% . After intervention “4 drugs “and “5 drugs or above” use is decreased which is 6% and 3% respectively but other are increased.

Table 3.3.7 A: No. of drugs per case of ARI patients by age group less than 18 years (Public sector)

	Before Intervention		After intervention	
	No. of Cases	%	No. of Cases	%
No drug	0	0	7	4
One drug	16	6	16	9
Two drugs	64	26	56	31
Three drugs	102	41	82	47
Four drugs	52	21	11	6
Five drugs and above	16	6	5	3



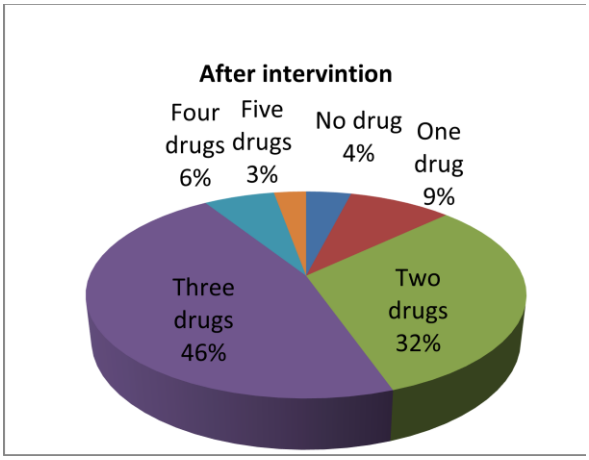


Figure 3.3.7.a (I): No. of Drug Cases (<18 yrs)

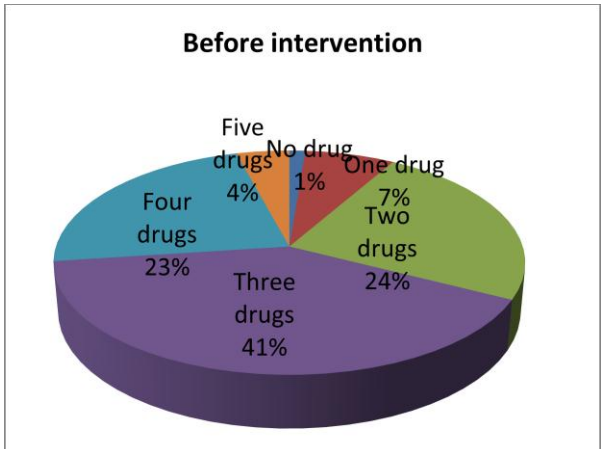
Figure 3.3.7.a (II): No. of Drug Cases (<18 yrs)

3.3.8 above 18 years of age in private sector

In public health care sectors the tendencies of receiving multiple numbers of drugs in patients having above 18 years are shown In Table 3.3.8 A and Figure 3.3.8 a. It was seen that before intervention patient having “no drug” is 1%, “one drug” is 7%, “2 drugs” is 24%, “3 drugs” is 40%, “4 drugs” is 23% and “5 drugs or above” is 4% . After intervention only “4 drugs “and “5 drugs or above “use is decreased which is 6% and 2% respectively but other are decreased.

Table 3.3.8 A: No. of drugs per case of ARI patients by age group > 18 years (public sectors)

	Before Intervention		After intervention	
	No. of Cases	%	No. of Cases	%
No drug	3	1	6	4
One drug	17	7	18	12
Two drugs	58	24	45	31
Three drugs	97	40	63	43
Four drugs	55	23	9	6
Five drugs	10	4	3	2



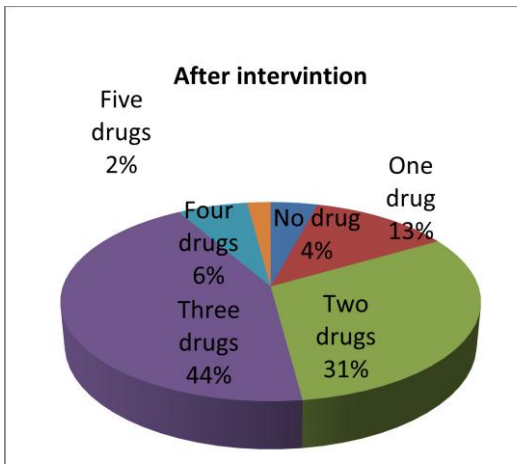


Figure 3.3.8 a (I): No. of Drug cases (.>18 yrs)

Figure 3.3.8 a (II): No. of Drug cases (.>18 yrs)

3.4 Average number of Antibiotics received by age group of patients in public sectors

Before intervention, average number of antibiotics consumed by children in public sectors under 2 years and >18 years was 1.21 and .55 respectively. Similarly patients with age range 2-<5years and 5-18 years intake average number of drugs and it is 1.41 and 1.24 before intervention. This value decreased to an average number of 1.10 and .39 after the

intervention for less than 2 years and greater than 18 years of patients. For children 2-< 5 years of age the average number of drugs per prescription is high. This is shown in Table 4.4A, 4.4B and Figure 4.4a and 4.4b

Table 3.4.A: Average number of antibiotics received by age group of patients in public sectors

	< 2 years		2-<5 years		5-18 Years		>18 years	
	Total cases	Antib.	Total cases	Antib.	Total cases	Antib.	Total cases	Antib.
Before int.	398	483	560	791	320	398	340	189
Number of drugs per prescription		1.21		1.41		1.24		.55
After int.	350	386	402	490	300	235	330	130
Number of drugs per prescription		1.10		1..21		.78		.39

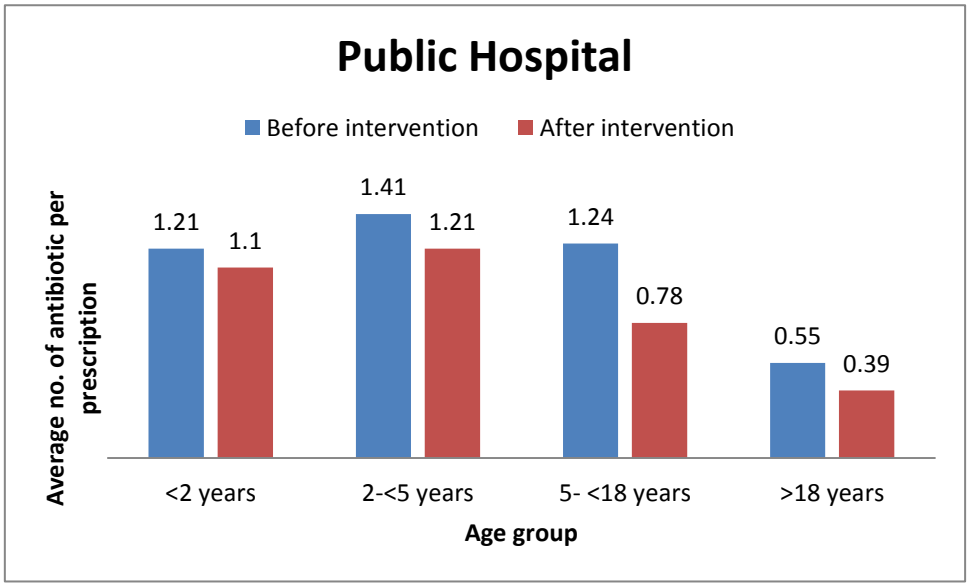


Figure 3.4.a: Average Number of antibiotic per prescription before and after intervention in public sectors by age group

Table 3.4.B: Average number of antibiotic per prescription before and after intervention in private sectors by age group

	<2 years		2-<5 years		5- <18Years		>18 years	
	Total cases	Antib.	Total cases	Antib.	Total cases	Antib.	Total cases	Antib.
Before int.	400	498	810	1149	250	495	240	225
Number of drugs per prescription		1.25		1.41		1.98		.93
After int.	280	401	701	1108	175	480	144	220
Number of drugs per prescription		1.43		1.58		2.75		1.52

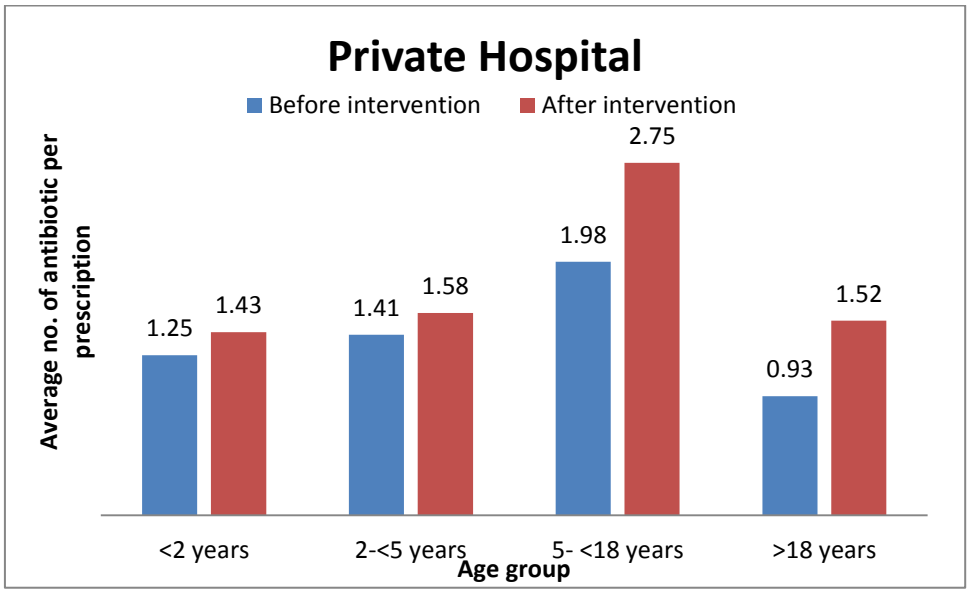


Figure 3.4b: Average Number of antibiotic per prescription before and after intervention in private sectors by age group

3.5 Improvement of average number of drugs after encounter in ARI treatment both in Public and Private Sectors

In public sectors before encounter prescribed 6458 drugs and after counter prescribed 4913 drugs. On the other hand, in private hospitals prescribed 10,213 drugs before

encounter and 9663 drugs after counter. After encounter the quantity of prescribed drugs reduced 24% after intervention and only 6% reduced in private sectors. The reduce tendency is higher in public hospitals than private. According these data, the reduced % of public sectors created a significant improvement which is very less in private. It is shown in table

Table 3.5.A: Improvement of average number of drugs after encounter in ARI treatment both in Public and Private Sectors

	Public sectors		Private sectors	
	Before int.	After int.	Before int.	After int.
Total no. of drug	6458	4913	10,213	9663
Total reduced		24%		6%

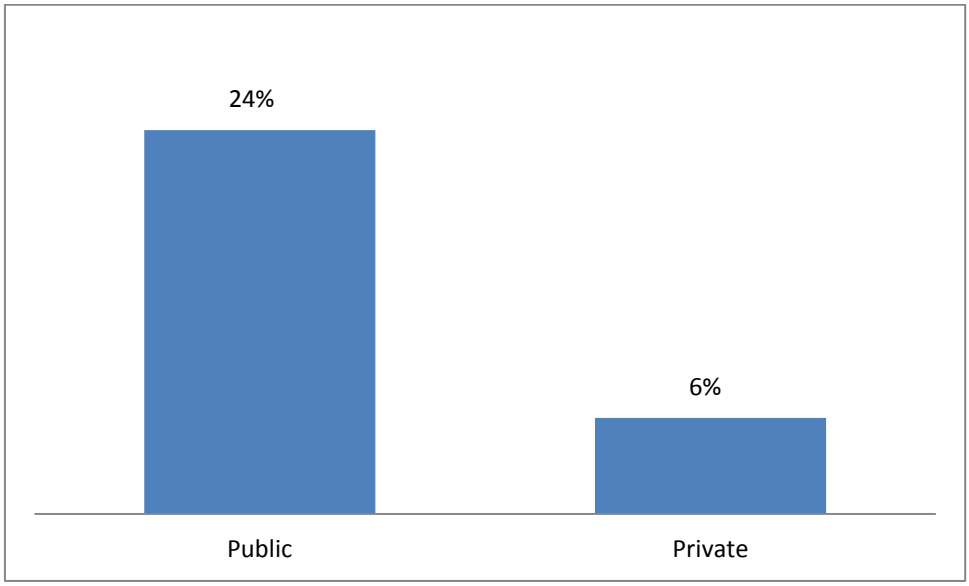


Figure 3.5.a: Total % of number of drugs reduced after intervention

3.6 Average number of antibiotic per prescription before and after intervention both in public and private sectors

The table shows that percentage of use of antibiotics in Public sectors was less than in Private sector. It was 1.24 in Public whereas in Private sector it was 1.57 before intervention. After intervention, average number of antibiotic reduction both in public and private sectors are 0.96 and 1.47 respectively. It is reflected in Table 3.6A and Figure 3.6a

Table 3.6.A: Average number of antibiotic per prescription before and after intervention both in public and private sectors

	Public sectors	Private sectors
Antibiotic before int.	1.24	1.57
Antibiotic after int.	0.96	1.47

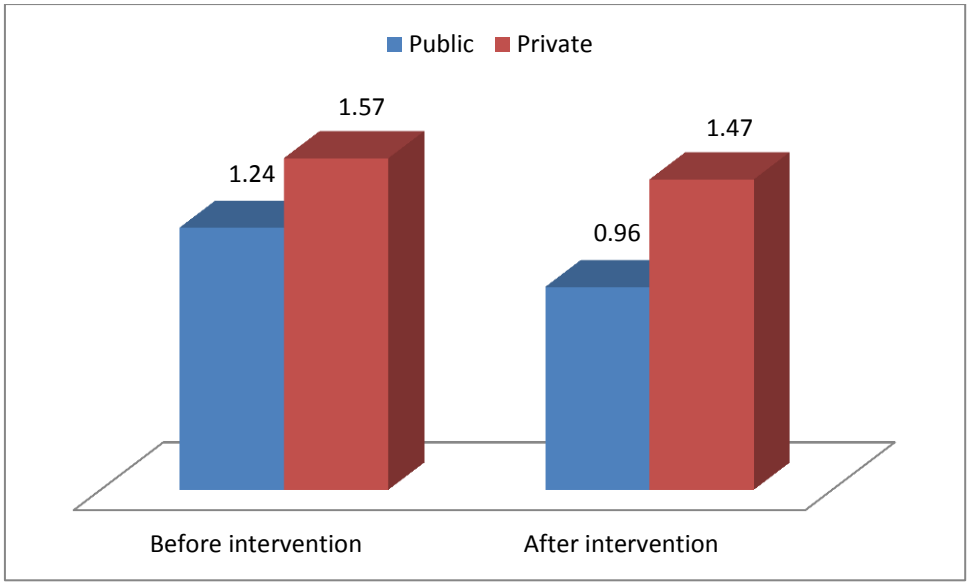


Figure 3.6.a: Improvement of antibiotic use in case of ARI treatment both in public and private sectors before and after intervention

3.7 Patient satisfaction and percentage of patients' satisfaction inquiry of ARI treatment

In public hospitals patients were 10% very satisfied, 73% little satisfied, 5 % little dissatisfied and 12% very dissatisfied. On the other hand, in private sectors 33% patients were very satisfied; little satisfied 50%, little dissatisfied 12% and very dissatisfied only 5%. From these data, we found that patients' little satisfaction is higher in public sectors than the private sectors. Actually patients' satisfaction depends on many factors as facilities available in the hospital, physicians approach with them, hospital management systems etc.

Table 3.7A: % of patient satisfaction in Public and Private sector

Patients' satisfaction (%)				
	Very satisfied	Little satisfied	Little dissatisfied	Very dissatisfied
Public	10	73	5	12
Private	33	50	12	5

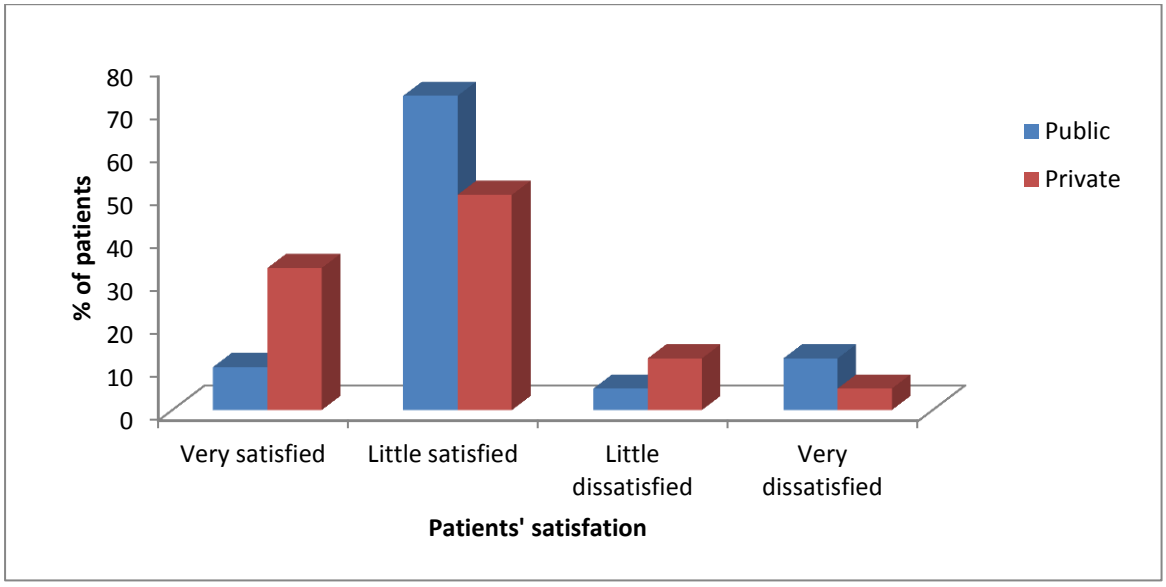


Figure 3.7a: % of patient satisfaction in Public and Private sector

3.8 Percentage of patients' hearing during ARI treatment

In public sectors 59% of patients are claimed that physicians are not listening their problems properly and 19% patients claimed physician's listening there problems fairly. On the other hand, in private sectors 24% patients are claimed negative about physicians that they didn't hear their problems which are less than the public sectors. And 27% patients are claimed that physicians listen fairly their problem. So we can easily say that patients have more faith the physicians in private sectors than the public.

Table 3.8.A: %Patients hearing between public and private hospitals

Patients hearing %	Not	Adequate	Fair	Little
Public	59%	10%	19%	12%
Private	24%	36%	27%	13%

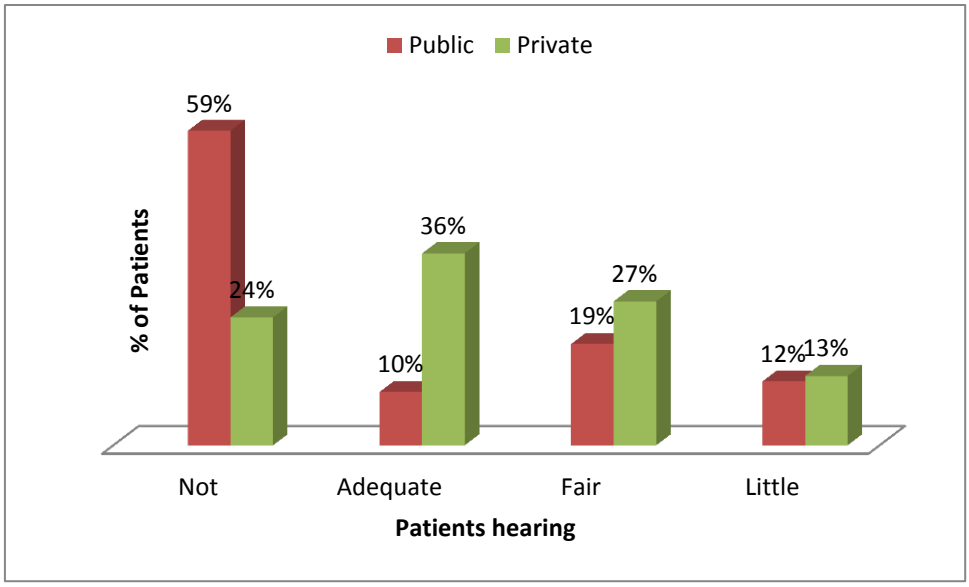


Figure 3.8.a: Percentage of patients' hearing during TB treatment

3.9 Summary of the effects of intervention on different aspects in public and private sectors in ARI Treatment Dhaka Metropolitan

In public sector 91% of drug prescribed is listed on EDL which is higher than private sector (82%) before intervention. After intervention 97% prescribed in public sectors could be listed on EDL but only 86% prescribed in private sector can be listed on EDL.

In private hospitals average consulting time around 236 seconds but 125 seconds in public before intervention. After intervention private health care sector showed an increase manner in consulting time which is 249 seconds which and higher than public health care sector (136 seconds). Only 12% of patients have correct dosing knowledge in

private sectors. Both sectors have very poor dosing knowledge before and after intervention. Adequate labeling is only obtained in public sector.

Table 3.9.A: Summary of the effects of intervention on different aspects in public and private sectors in ARI treatment Dhaka Metropolitan

Indicators	Public sector		Private sector	
	Before int.	After int.	Before int.	After int.
% of drug from EDL	91	97	82	86
Avg. consulting time (sec)	125	136	236	249
% of patient knowing - correct dosing	3	9	11	12
% of drug dispensed	98	180	0 (N.A)*	0 (N.A)
% of drug adequately labeled	69	78	0 (N.A)	0 (N.A)

3.10 Comparative study of basic information of prescription in case of ARI treatment both for public and private sectors

In public sectors a total of 11,371 drugs is prescribe in 3000 prescription before and after intervention which is in an average 4 drugs per prescription. On the other hand a total of 19,876 drugs are prescribed in private sectors before and after intervention and the average number of drugs per prescription are 6.62. Public sectors contain 73% diagnostic test within prescription and private contain 99% diagnostic test within prescription.

In public sectors 91% prescription contain more than four diagnostic tests which is 2730 of a total case 3000. In private sectors it is 97%.

In public sectors 61.53% prescription contain multivitamins on the other hand in private sectors it is 85.2%.

A prescription in public sectors for the treatment of TB cost for 378 BDT per prescription. But the expenditure in private sectors is 491 BDT which is much higher than public sectors.

Table 3.10 A: Comparative study of basic information of prescription in case of ARI treatment both for public and private sectors

Category of hospitals	Average Number of drug per prescription	Prescription contains diagnostic history %	Prescription contains more than 4 diagnostic test %	Presence of multivitamin %	Expenditure of per prescription (Excluding Test)
Govt. Hospitals	4 Total drug= 11,371 out of 3000 prescriptions	73% Total case= 2190 out of 3000 prescriptions	3.7% Total case= 111 out of 3000 prescriptions	61.53% Total case= 1846 out of 3000 prescriptions	378 Tk.
Private Hospitals	6.62 Total drug=19,876 out of 3000 prescriptions	99% Total case=2970 out of 3000 prescriptions	93.95% Total case= 2820 out of 3000 prescriptions	85.2% Total case=2556 out of 3000 prescriptions	491 Tk.

Conclusion

Conclusion

Irrational prescribing pattern is a habit which cure is troublesome. For any kind of error of a physician the patients suffer badly. Though ARI is very prone in Dhaka city and basically Childs are very affected by this disease, so physician should more concern. Public hospitals have to increase their facilities, consulting time and all other services that general people expect. Besides private hospitals should more reduce prescribing more drugs, tests etc. ARI treatment is comparatively expensive since its maximum time occurred by bacterial attack and for these reason physician prescribed a lots of antibiotics. Physicians need to be clarified in their conception about rational prescription pattern, clinical pharmacology, and pharmacotherapy to improve prescription practice rather. Doctors, pharmacists and nurses all together should need to build triangle health care committee to minimize health problem. Though this trend is not turned on in our country yet but it's highly expected. Governing bodies have to be more concerned and should take necessary steps for irrational prescribing pattern. No interruption is desirable in our public health care system. Patients will get their proper consultancy and be happy.

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