Survey on Analyzing Medicine Leaflets in Bangladesh:Impact,Availability,and Public Health Expectations

Thesis paper

[*In the partial fulfillment of the requirements for the degree of Masters of Pharmacy]*

Submitted To

The Department of Pharmacy

Faculty of Allied Health Sciences

Daffodil International University

Submitted By

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Department of Pharmacy

Faculty of Allied Health Sciences

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May 2024

APPROVAL

This certifies that the work on the thesis that was turned in by **Shakil Khan Shuvo**, entitled **Analyzing Medicine Leaflets in Bangladesh:Impact,Availability,and Public Health Expectations"** The Examination Committee has granted approval for it to partially complete the requirements for the degree of Masters of Pharmacy (M. Pharm.) in the Department Of Pharmacy ,Daffodil International University

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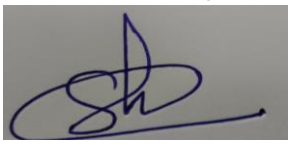
DECLARATION

This is to certify that project work entitled "**Analyzing Medicine Leaflets in Bangladesh:Impact,Availability,and Public Health Expectations"** has been carried out by **Shakil Khan Shuvo** bearing ID No.: 0242310011093004 in the Faculty of Allied Health Sciences Department Of Pharmacy, Daffodil International University. The above project work or any part of this work has not been submitted anywhere for the award of any degree or diploma

Submitted By



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Shakil Khan Shuvo

Student ID: 0242310011093004

Department of Pharmacy

Faculty of Allied Health Sciences Daffodil

International University

Certificate

This is to certify that the results of the investigation that are embodied in this thesis works are original and have not been submitted before in substance for any degree or diploma of this university. The entire present work submitted as a thesis work for the partial fulfillment of the degree of Masters of Pharmacy.

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ACKNOWLEDGEMENT

Glory be to the Almighty Allah, the ruler of this universe! They made it possible for me to start and finish this research project and, in the end, compose the conclusion thesis work necessary to earn a master's degree in pharmacy. No endeavor can ever be successfully completed by the combined efforts of one person. If I did not express my gratitude and admiration to the following people for their invaluable contributions to the project work, I would be failing in my responsibility.

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I would want to use this opportunity to thank and give my best compliments to all of the other distinguished Department of Pharmacy teachers, Daffodil International University, for their endless efforts during my studies & intellectual independence to carry out the research. And last but not the least, I would like to thank myself for persevering, having faith in myself, and working so hard to finish my thesis work.

My Parents,

The persons who always encourage me in every sphere of my life.

My teacher,

The persons who guided me in this process and the faculties who kept me on track.

Abstract

Background: Bangladesh is one of the South Asian countries having different public health issues like child and maternal death, and outbreaks of communicable – noncommunicable diseases. The desideratum of this research is to investigate and analyze the influence of patient education pamphlets on public health in Bangladesh and to evaluate patient's expectations, scope of development and provision of current practice of Patient Information Leaflets (PIL).

Methods: The study is carried out using an online survey utilizing Google Form and through mass interviews conducted offline**.** A self-administered questionnaire prepared utilizing a questionnaire-based interview schedule. The entire study was built around a targeted questionnaire that was developed utilizing information from previous research on medicine information leaflets that had been done in various parts of the world as well as some general knowledge about medicine information leaflets. The questionnaire was prepared divided questions in four parts of Personal Information, Knowledge About Medicine Information Leaflet, Usability & Room for Improvement of Medicine Information Leaflet and Health Benefit.

Results: Data was collected from 984 people of different ages, genders, demographic locations, education levels and occupation. Among them, 699 people know about it and 340 people read it regularly. Around 41% of people read it to learn about dose but 49% of people find it hard to understand. Although 59% of people admit PIL helps them a lot to understand the medication but 38% thought further improvement is needed. 23% of the population currently use digital media to gain information regarding medicine but 44% of the population prefer it over traditional media as 35% of the population thought digital media helps them to compare between brands. 38% of the population read PIL before buying a medicine but for 28% it influences on their buying decision.

Conclusion: Patient Information leaflet makes a great impact on people's understanding of medicine and a more patient oriented leaflet can improve the overall public health scenario in Bangladesh.

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Chapter 1
Introduction

1.1 Patient Information Leaflet:

Bangladesh's pharmaceutical business has grown and developed tremendously over the last few decades, establishing itself as an essential component of the country's healthcare system. The relevant safety, effectiveness, and quality criteria for pharmaceutical goods must be met by all products the DGDA is in charge of this Medication booklets, which are required to be included with every prescription medicament, are under control in this regard. [1]

A patient information leaflet (PIL) is a document that provides essential information about a medication or medical device to patients. PILs are a primary source of medication information for patients, helping them understand how to use the drug or device safely and effectively, and informing them of any potential risks or side effects. [1] Typically, PILs are included with the medication or device when dispensed and are also available online.

The content of a PIL generally includes the medication or device name, its intended use, usage instructions, and any special precautions [2]. It also covers potential side effects, interactions with other medications or medical conditions, storage information, and the medication's duration of use [3].

PILs play a crucial role in promoting patient safety and enabling informed decisions about medications. However, for PILs to be effective, they must be written in clear, simple language that patients can easily understand. This necessitates involving patients in the creation and evaluation of PILs to ensure they are user-friendly and comprehensible [4].

Regular updates and reviews of PILs are also essential, particularly as new information about medications or devices becomes available. This is especially important for new drugs or devices, where the PIL may need frequent updates as more data emerges [5].

Medication information is essential to ensure that patients can take their medications as prescribed and safely. Some people misremember or misunderstand spoken directions given by medical professionals [4]. PILs had an impact on patients' medication regimens and prompted them to share information with their physicians [6].

Nofiate®
Fenofibrate capsule

Presentation
Nofiate® : Each capsule contains Fenofibrate BP (micronised) 200 mg.

Description
Fenofibrate (Nofiate) is a fibric acid derivative. Fenofibrate (Nofiate) is rapidly hydrolyzed after oral ingestion to its pharmacologically active form, fenofibric acid. Fenofibric acid produces reductions in total cholesterol, LDL cholesterol, Apo-lipoprotein B, Total triglycerides and VLDL. In addition, treatment with Fenofibrate results in increases in HDL and apo-proteins apoAI apoAII. Fenofibrate also reduces serum uric acid levels in hyperuricemic and normal individuals by increasing the urinary excretion of uric acid. The micronised form of Nofiate(Fenofibrate) has enhanced absorption over the non-micronised formulation.

Indications
Nofiate (Fenofibrate) is indicated for hyperlipidemias of type IIa, IIb, III, IV & V in patients who have not responded adequately to diet & other appropriate measures.

Dosage & administration
Nofiate (Fenofibrate) capsule 200 mg once daily is recommended as the dose for the treatment of primary hypercholesterolemia, hypertriglyceridemia or mixed hyperlipidemia. Absorption of Nofiate is increased by approximately 35% when administered with food.

Contraindications
Fenofibrate is contraindicated in patients with hypersensitivity to Fenofibrate, severe renal or hepatic impairment, existing gall bladder disease, breast feeding mothers, photosensitivity to ketoprofen.

Side-effects
Gastro-intestinal (e.g. nausea, anorexia, gastric pain), pruritus, urticaria, impotence, also headache, dizziness, vertigo, fatigue, hair loss; myotoxicity.

Precautions
Special care needed in patients with renal disease, as progressive increases in serum creatinine concentration or failure to follow dosage guidelines may result in myotoxicity; discontinue if myotoxicity suspected or creatinine kinase concen-tration increases significantly. Liver function tests recommended every 3 months for first year.

Use in pregnancy
Fenofibrate is not recommended for pregnant women.

Drug Interactions
Fenofibrate has been reported to potentiate the anticoagulant effects of warfarin. When administered with antidiabetic drug it may improve glucose tolerance and have additive effect. Fenofibrate may also increase the nephrotoxicity of cyclosporine. Due to a potential increase in the risk of rhabdomyolysis, cautions should be taken against the use of Fenofibrate with HMG-CoA reductase inhibitors. However, the use of low-dose statins with Fenofibrate appears to be well tolerated.

Commercial pack
Nofiate : Each box contains 3 blister strips of 10 capsules.

Manufactured by
Incepta Pharmaceuticals Ltd.
Dhaka, Bangladesh
® Registered Trademark

PTG : 143/06-03/15000 SHP
1 250603 NFG

Fig 1.1: Patient Information Leaflet Example

PILs play a vital role in educating patients about their medication, and help to guarantee their safe and efficient usage. By involving patients in the design and testing of PILs, and by keeping them up-to-date, we can help to guarantee that patients are equipped with the knowledge necessary to make educated decisions about their healthcare [7].

1.2 Different Parts of Patient Information Leaflet:

A patient information leaflet typically contains several important sections to provide essential information to patients regarding their medication, treatment, or medical condition. Here are the common parts in a patient information leaflet as per global standard (GOV.UK, 2020)[8].

a) **Identification of the medicine**: The product's name, strength, pharmaceutical form, and active ingredient(s) should all be listed.

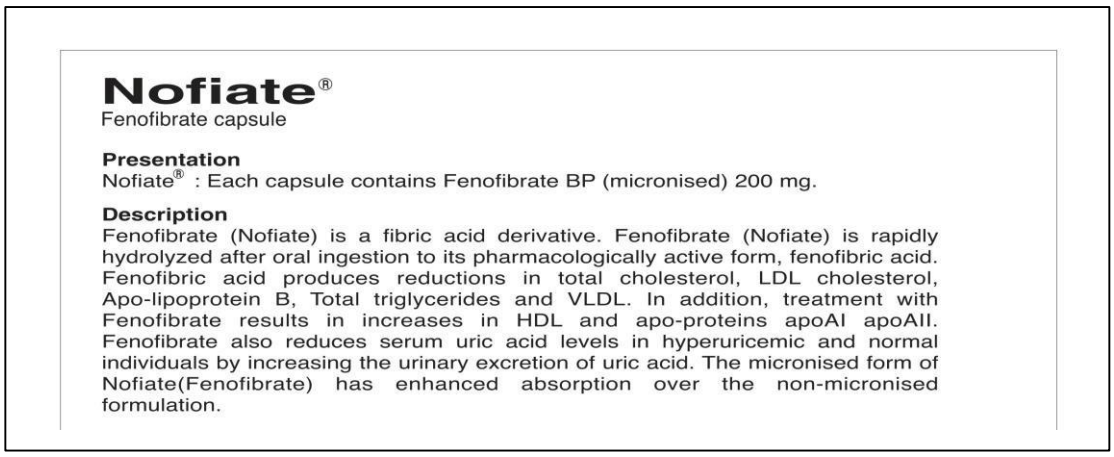

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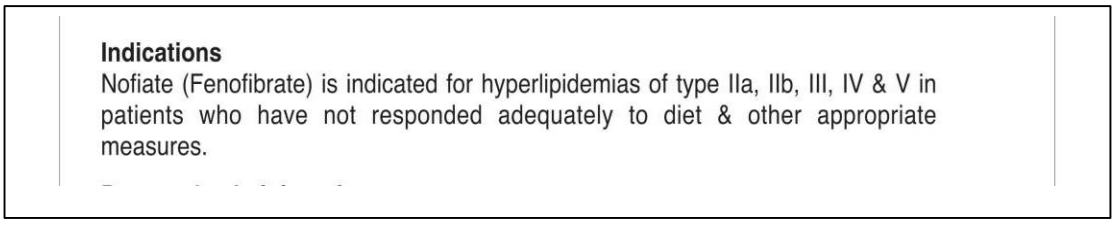
Fig 1.2: Patient Information Leaflet Identification

b) **Therapeutic indications:** It is necessary to list the criteria under which the medication is approved. Any relevant benefit information should be included in this area.



Indications
Nofiate (Fenofibrate) is indicated for hyperlipidemias of type IIa, IIb, III, IV & V in patients who have not responded adequately to diet & other appropriate measures.

Fig 1.3: Patient Information Leaflet Therapeutic Indication

c) **Information necessary before taking the medicine:** Conditions under which the medication should not be used, any safety measures, alerts, conflicts with other medications or foods, details for patients in particular groups (such as expectant or nursing mothers), and any impact the medication might have on the patient's capacity to operate a motor vehicle[9].

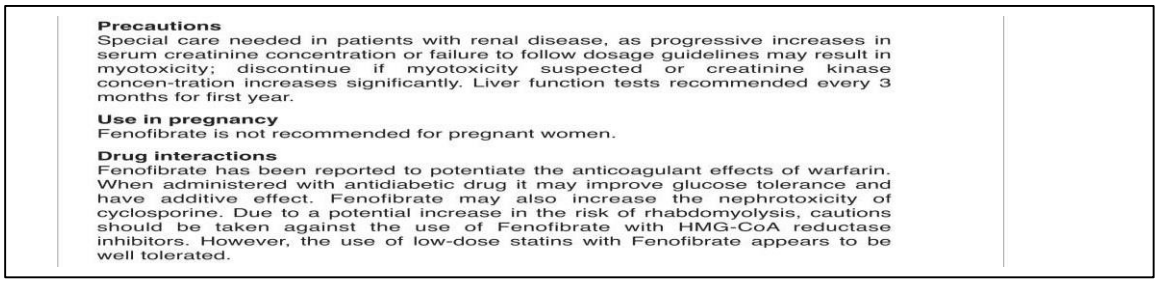


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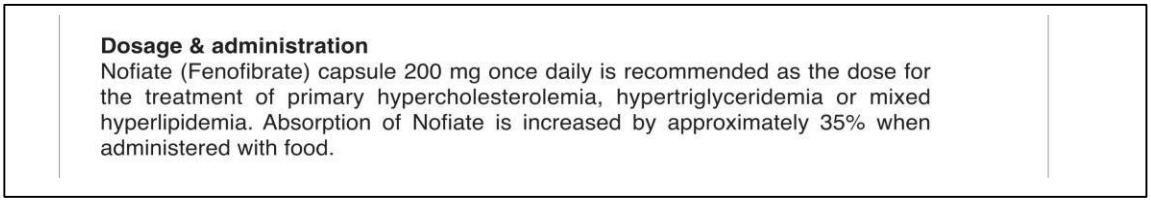
Fig 1.4: Patient Information Leaflet Information Regarding medicine Intake

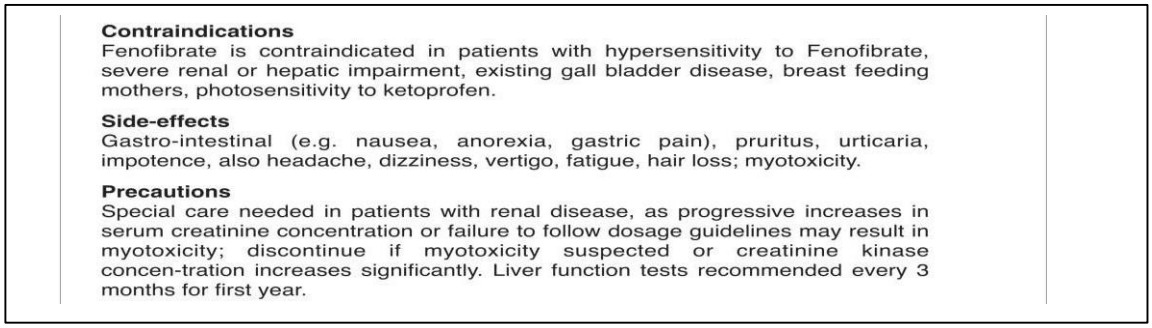
d) **Dosage:** How the medication should be used, how often it should be taken, how long therapy will last, how much to take, what to do if a dosage is missed, and, if needed, how to handle overdose and withdrawal symptoms.



Dosage & administration
Nofiate (Fenofibrate) capsule 200 mg once daily is recommended as the dose for the treatment of primary hypercholesterolemia, hypertriglyceridemia or mixed hyperlipidemia. Absorption of Nofiate is increased by approximately 35% when administered with food.

Fig 1.5: Patient Information Leaflet Dosage Information

e) **Description of side effects:** All potential adverse effects that might occur from taking the drug as directed, along with what the patient should do if one does. These should be sorted by significance after that by frequency.



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Gastro-intestinal (e.g. nausea, anorexia, gastric pain), pruritus, urticaria, impotence, also headache, dizziness, vertigo, fatigue, hair loss; myotoxicity.

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Special care needed in patients with renal disease, as progressive increases in serum creatinine concentration or failure to follow dosage guidelines may result in myotoxicity; discontinue if myotoxicity suspected or creatinine kinase concen-tration increases significantly. Liver function tests recommended every 3 months for first year.

Fig 1.6: Patient Information Leaflet Side Effect Information

f) **Additional information:** This contains information on the product description, registered pack sizes, excipient, storage needs, and the name and address of the maker and MAH.rer.

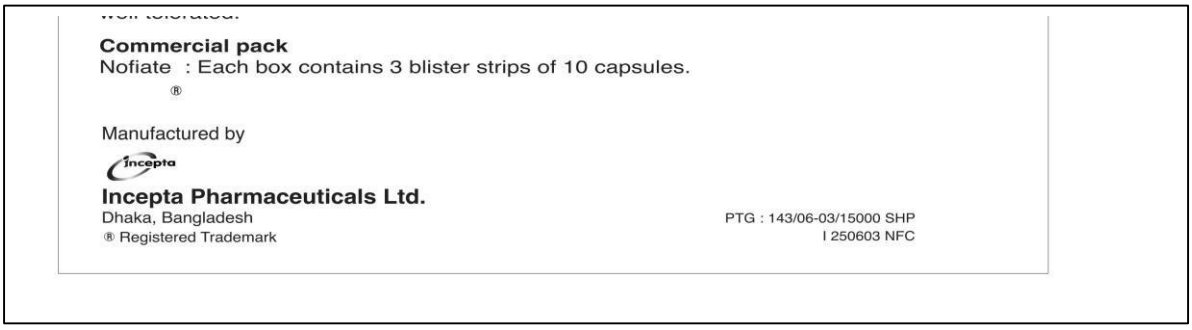


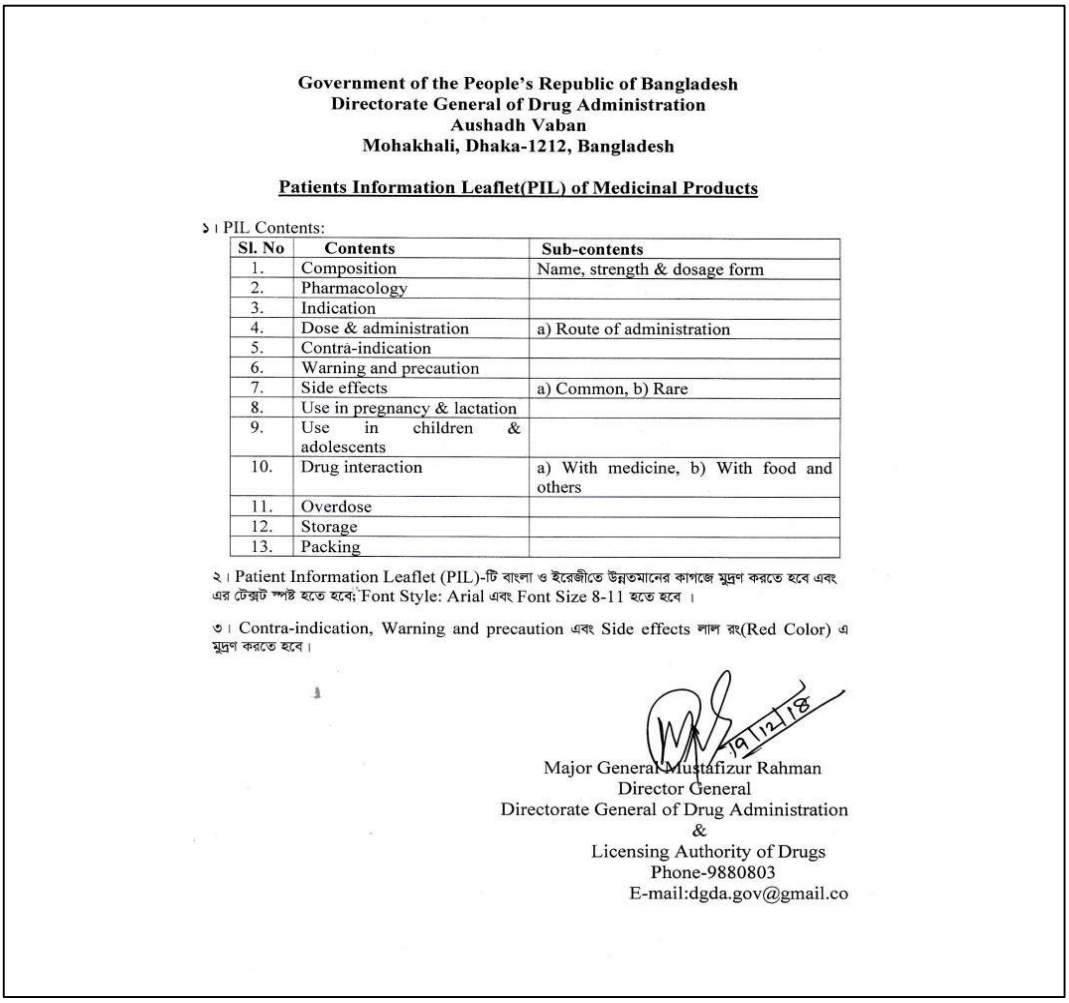
Fig 1.7: Patient Information Leaflet Additional Information

It's important to note that the arrangement of information contained in patient information leaflets may vary depending on the country, regulatory requirements, and specific medication or procedure. The above description provides a general overview of the common sections you can expect to find in a patient information leaflet[10].

1.3 **Bangladeshi Regulatory Body Direction:**

Directorate General of Drug Administration (DGDA) is the governing body of Bangladesh that controls the Drug Act and implements new rules for medicine production, marketing, and other aspects. In 2018 DGDA governing body released a statement where it was stated the following sections should be a must for any patient information Leaflet (DGDA, 2018) [11].–

a) Composition
b) Pharmacology
c) Indication
d) Dose and administration
e) Contra-indication
f) Warning and precaution
g) Side effects
h) Use in pregnancy and lactation
i) Use in children and adolescents
j) Drug interaction
k) Overdose
l) Storage
m) Packing



Government of the People's Republic of Bangladesh
Directorate General of Drug Administration
Aushadh Vaban
Mohakhali, Dhaka-1212, Bangladesh

Patients Information Leaflet(PIL) of Medicinal Products

১। PIL Contents:

Sl. No	Contents	Sub-contents
1.	Composition	Name, strength & dosage form
2.	Pharmacology	
3.	Indication	
4.	Dose & administration	a) Route of administration
5.	Contra-indication	
6.	Warning and precaution	
7.	Side effects	a) Common, b) Rare
8.	Use in pregnancy & lactation	
9.	Use in children & adolescents	
10.	Drug interaction	a) With medicine, b) With food and others
11.	Overdose	
12.	Storage	
13.	Packing	

২। Patient Information Leaflet (PIL)-টি বাংলা ও ইরেজীতে উন্নতমানের কাগজে মুদ্রণ করতে হবে এবং এর টেক্সট স্পষ্ট হতে হবে; Font Style: Arial এবং Font Size 8-11 হতে হবে ।

৩। Contra-indication, Warning and precaution এবং Side effects লাল রং(Red Color) এ মুদ্রণ করতে হবে।

19/12/18

Major General Mustafizur Rahman
Director General
Directorate General of Drug Administration
&
Licensing Authority of Drugs
Phone-9880803
E-mail:dgda.gov@gmail.co

Fig 1.8: Patient Information Leaflet content statement of DGDA

Chapter 2

Purpose of the study

2.0 Aims and Objectives of the Work:

Bangladesh is among the world's most densely inhabited nations. It ranks 10th in the world in terms of population density with 1,265 people per square kilometer (Global-Graph, 2023). With a huge population, Bangladesh faces a number of problems including public health [12]. Patient Information Leaflet can be used as an effective tool to upgrade the current public health crisis in Bangladesh. So, the aim of the work was to perform the following objectives-

2.1.1 To analyze the impact of patient information leaflets on public health in Bangladesh.

2.1.2 To Find out the patient's expectations from patient information leaflet.

2.1.3 Provision of current practice of patient information leaflet.

2.1.4 To Assessing the scope of development of patient information leaflet.

2.1.5 Evaluate health benefits offered by patient information leaflet.

2.1.6 Determine the general public's level of awareness of the existence and purpose of medical pamphlets. Lastly understand how medicine information leaflet can contribute to public health in Bangladesh.

Chapter 3
Literature Review

3.0 Pongpunna, 2018 conducted a survey on outpatients of Thailand and showed about 91.3% patients received PIL where only half of them claimed they always read the PIL. The study also suggested a more simplified PIL in order to gain the utmost benefit[13]. In 2020 another survey was conducted in Thailand by Jarernsiripornkul on healthcare professionals to evaluate practice, expectations and attitudes towards PIL where 65.6% of responders found PIL very useful and 30% thought that was useful and almost all of them agreed that PIL should be developed to increase its understandability[14]. Healthcare providers participated on a survey regarding provision and opinions directed in New Zealand and indicated a qualitative analysis of five themes of likes and dislikes on PIL by Young, 2018[15]. Dickinson showed In the EU, how much information on the benefits of drugs is included in patient booklets? and commented Present PILs do not effectively convey information about benefits in countries of Europe[16].After reading the pamphlet for the first time, almost 60% of patients said they had never or hardly ever glanced at it a telephone survey in the UK by Raynor, 2007[17]. The study also found that the side-effects section is the only reason for those who read PIL[18]. Other parts are less or even left unread by them.The efficacy of patient information leaflets (PILs) was assessed in an outpatient department of a large tertiary care public health facility in India was evaluated by Gupta, 2005[19]. It was observed that PILs that the pharmacist gave the patients greatly increased their understanding of medications and their at-home compliance. Muhammad, 2022 discussed major issues and challenges in public health of Bangladesh and emphasized on governance, accessibility, and affordabilitytoovercometheseissue[20].

Chapter 4
Methodology

4.0 Study Design and Setting

The research is carried out using a survey which is performed online using Google Form and through offline interviewing mass people. This cross-sectional survey study is carried out to determine the knowledge about Medical Information Leaflet and their impact on public health. Using an interview schedule based on a questionnaire, the author developed a self-administered questionnaire. The whole study was designed based on a purposed questionnaire which was prepared using some former studies on medicine information Leaflets conducted in different parts of the world and some common knowledge related to Medicine Information Leaflet. The questionnaire contained 18 questions and consisted of Personal Information, Knowledge about Medicine Information Leaflet, Usability & Room for Improvement, and Health Benefit regarding Medicine Information Leaflet.

4.1 Working procedure:

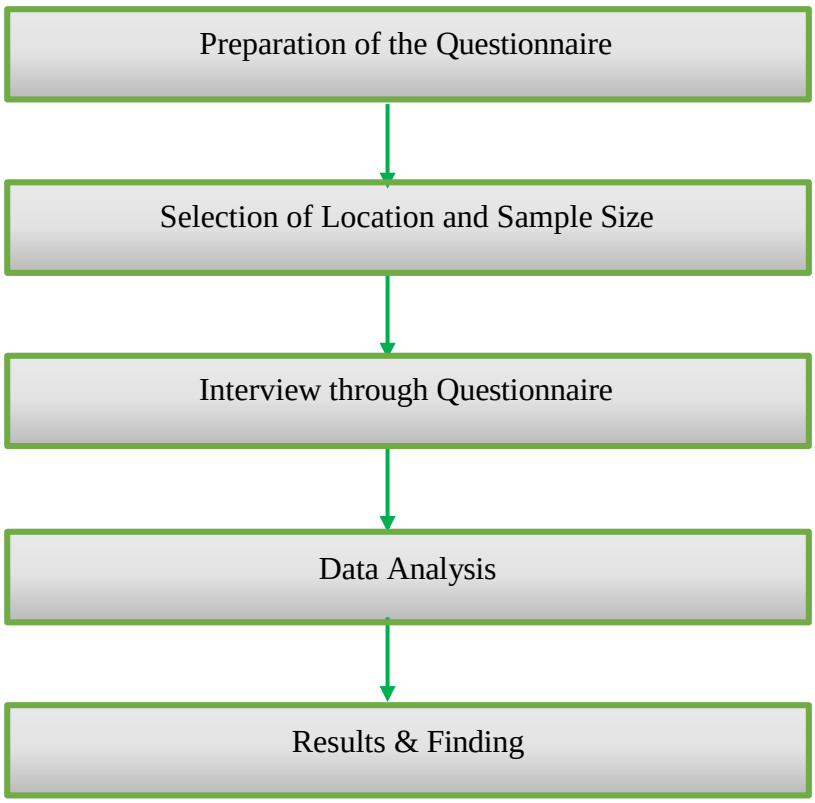


Fig: 4.1: Working Procedure

4.2 Preparation of Questionnaire:

The questionnaire was created using a few standard factors that affect awareness and understanding of Medical Information Leaflet. The questionnaire was constructed by Medical Information Leaflet knowledge-based published surveys. The sensitivity and specificity of the questionnaire were determined by utilizing data from several published literature reviews. The questionnaire was divided into four parts.

4.2.1 First Part: Personal Information:

First part of the questionnaire consists of seven basic personal question. They are:

4.2.1.1 Name
4.2.1.2 Age Range
4.2.1.3 Living Region
4.2.1.4 Profession
4.2.1.5 Gender
4.2.1.6 Education
4.2.1.7 Current living district.

Some of the questions were made mandatory to answer. The questions were prepared to identify and qualify the sample group. This information will help analyze data in different categories. Comparative analysis between those categories will be possible.

The study is highly focused on collecting information from a verities sample group of different regions from Bangladesh. So, to categorize them and understand correlation between the sample group and their response personal data were collected.

During collection data privacy policy is maintained. No sensitive information was collected and all information was provided by the sample of their free will.

4.2.2 Second Part: Knowledge About Medicine Information Leaflet:

The second part was conducted with the sample's knowledge about medicine information leaflet. Five questions were asked during this part. Those were:

4.2.2.1 Did they know about Medicine Information Leaflet provided along with medicine?
4.2.2.2 How often did they read any Medicine Information Leaflet?
4.2.2.3 For which information did they read the Medicine Information Leaflet most recently?
4.2.2.4 How easy or hard do you think to get the information you need from Medicine Information Leaflet?
4.2.2.5 What is the first thing you notice on a Medicine Information Leaflet?

This part of the study was designed to understand people's knowledge and how often they read a medicine information leaflet. The information on the knowledge about Medicine information leaflet can be used as a marker of public health status. The answers were taken in multiple-choice list, where for the first question the answer options were Yes or No. For the second

question, the answer options were Yes, No and Sometimes as some studies show that patients often do not read medicine all information from PILs.(Joseph P Nathan, 2007). For the third question, the answer options were to know about its dosage and indications, to know about side effects and to know about precautions. An open option was also offered if the interviewee also wanted to add anything from their own.

For the fourth question the answer options were "hard to understand", "It's Easy" and "I think it requires technical knowledge". Here technical knowledge is used to refer to knowledge about pharmacology and pharmaceutics. And for the final question the options were "Indication & Use", "Dosage", "Side Effects", "Precautions" which are the most common reasons to read a medicine information leaflet. The options were chosen as per different study (Anna Horwitz, 2009). An option also placed as "Never" read it as many of the patient admit that they don't read the medicine information leaflet

4.3 Part Three: Usability & Room for Improvement of Medicine Information Leaflet:

Six questions were asked to the patients to understand the usability and room improvement of the Medicine Information Leaflet in this part. The questions were:

a) How much you think Medicine Information Leaflet helps you to understand about a medicine?
b) Do you think there is a scope for improvement of Medicine Information Leaflet?
c) Which area do you think needed to be improved?
d) Which media do you use most to gain information about Medicine?
e) Which media do you feel is more convenient to use and gain information?
f) If you think Digital media is more convenient, why do you feel so?

This part of the study is designed to evaluate how much people are getting benefited and to find out the development area in a medicine information leaflet. The latter three questions are designed to gain opinions on digital or traditional media which is preferred by the population. And if anyone choose digital media over traditional ones an additional question is asked, why did they think so?

4.4 Part Four: Health Benefit:

Three questions were asked in this particular segment to evaluate the influence of the Medicine Information Leaflet on a patient. The questions were:

g) Do you always read Medicine Information Leaflet before buying medicine?
h) Do the information provided in Medicine Information Leaflet influences your buying option?
i) Do you notice any differences any difference between the verbal instruction from the doctor and information provided on a Medicine Information Leaflet (For Ex: Dosase, Doseinterval,Sideeffects)

For the first and third questions, the answering options were Always, Sometimes, and Never. For the second question, the answer options were Yes, NO and Sometimes.

The study objectives of the portion are to evaluate as a tool how much influence a leaflet can create on patients to buy medicine after reading them or always rely on the prescription? The third question's feedback will draw a picture if there is any information gap between the doctor's advice and the information provided on the leaflet.
The survey Form goes as follow –

Survey on Analyzing MedicineLeaflets in Bangladesh:Impact,Availability,and Public Health Expectations

Peace be upon you,

As part of my M.pharm thesis, I am conducting a survey on expectation and provision on medicine information leaflets and its impact on public health in Bangladesh. Please Share your thoughts and formation. Your co-operation Will be highly appreciated.

Regards,

Shakil Khan Shuvo

M.Pharm Student.

Daffodil International University.

Personal Information

1. Your Name? (আপনার নাম?)
2. Your Age ranges? (বয়স সীমা?)
    a) Less than 15 (১৫ বা তার কম)
    b) 16-35 (১৬ - ৩৫)
    c) More than 35 (৩৫ এর বেশী)
3. Your Profession?
    a) Student (শিক্ষার্থী)
    b) Medical Healthcare Provider (চিকিৎসা স্বাস্থ্যসেবাখাতে কর্মরত)
    c) Job Holder (চাকুরী)
    d) Unemployed (বেকার)
    e) Business (ব্যবসা)
    f) Other (অন্যান্য)
4. Your Living Region?
    a) Urban (শহর এলাকা)
    b) Rural (মফস্বল / গ্রাম)
5. Your Gender? (লিঙ্গ) a) Male (পুরুষ) b) Female (মহিলা)

6. Highest educational degree? (সর্বোচ্চ শিক্ষাগত ডিগ্রী)?
7. Current living District? (বসবাসরত জেলা?)

Knowledge About medical Information Leaflet

8. Do you Know about Medicine Information Leaflet provided along with medicine? (আপনি কি ওষুধের সাথে দেওয়া মেডিসিন তথ্য লিফলেট সম্পর্কে জানেন) – a) Yes (হ্যা) b) NO (না)

9. How often do you read any Medicine information Leaflet? (আপনি কি প্রতিবার ঔষধ ক্রয়ের পর লিফলেটটি পড়েন) - a) Yes (হ্যা) b) NO (না) c) Sometimes (মাঝেমধ্যে)

10. For which information you read Medicine information Leaflet most recently? (কোন বিশেষ তথ্যের জন্য আপনি মেডিসিন তথ্য লিফলেট পড়েন) –
    a) To know about dosage and indications (ডোজ এবং ব্যাবহারবিধি সম্পর্কে জানতে)
    b) To know about side effects (পার্শ্বপ্রতিক্রিয়া সম্পর্কে জানতে)
    c) To know about precautions (সতর্কতা সম্পর্কে জানতে)
    d) Other (অন্যান্য)
11. How easy or hard you think to get the information you need from Medicine information Leaflet? (মেডিসিন তথ্য লিফলেট থেকে আপনার প্রয়োজনীয় তথ্য পেতে আপনি কতটা সহজ বা কঠিন মনে করেন) –
    a) Hard To understand (কঠিন)
    b) Its Easy (সহজ)
    c) I think it requires technical knowledge (এটির জন্য প্রযুক্তিগত জ্ঞান প্রয়োজন)
12. What is the first thing you notice on a Medicine information Leaflet? (মেডিসিন তথ্য লিফলেটে আপনি প্রথমে কী লক্ষ্য করেন) –
    a) Indication & Use (নির্দেশনা এবং ব্যবহার)
    b) Dosage (ডোজ)
    c) Side Effects (পার্শ্ব প্রতিক্রিয়া)
    d) Precautions (সতর্কতা)
    e) Never read it (সাধারনত পড়া হয় না)

Usability & Room for improvement of Medicine information Leaflet

13. How much you think Medicine information Leaflet helps you to understand about a medicine? (ঔষধ তথ্য লিফলেট আপনাকে আপনাকে একটি ঔষধ সম্পর্কে বুঝতে কতটুকু সাহায্য করে?) –
    a) Helps me a lot (অনেক সাহায্য করে থাকে)
    b) Not much helpful (খুব বেশী উপকারী নয়)
    c) Not At all (মোটেও সাহায্য করে না)
14. Do you think there is a scope for improvement of Medicine information Leaflet? (আপনি কি মনে করেন মেডিসিন তথ্য লিফলেটের উন্নতির সুযোগ আছে) –
    a) Surely, I believe (মনে করি)
    b) No improvement is needed (কোন উন্নয়নের প্রয়োজন নাই)
    c) Not much sure about it (নিশ্চিত নই)
15. Which area do you think needed to be improved? (লিফলেটের কোন অংশের পরিবর্তন প্রয়োজন বলে আপনি মনে করেন?)
16. Which media you use most to gain information about Medicine? (মেডিসিন সম্পর্কে তথ্য পেতে আপনি কোন মিডিয়া সবচেয়ে বেশি ব্যবহার করেন?) –
    a) Medicine information Leaflet (ঔষেধর সাথে সরবরাহকৃত লিফলেট)
    b) Digital Media (For Ex: MedEX, DIMS, others) (অনলাইন মিডিয়া)
    c) Local Pharmacy (স্থানীয় ফার্মেসী)
17. Which media you feel more convenient to use and gain information? (আপনি কোন মিডিয়া ব্যবহার করতে এবং তথ্য অর্জন করতে বেশি সুবিধাজনক মনে করেন?) –
    a) Offline (For Ex: Medicine information Leaflet) (অফলাইন মিডিয়া)
    b) Digital Media (For Ex: MedEX, DIMS, others) (অনলাইন মিডিয়া)
18. If you think Digital media is more convenient, why you feel so? (আপনি যদি মনে করেন ডিজিটাল মিডিয়া আরও সুবিধাজনক, তাহলে কেন আপনি এমন মনে করেন?) –
    a) Easy Access (সহজলভ্য)

b) Easy for comparison with different Brands (একাধিক ব্রান্ডের ঔষধের তথ্য পাওয়া যায়) c) Written in more easy words (সহজ পাঠযোগ্য)

d) Dont think digital media is helpful (ডিজিতাল মিডিয়া সুবিধাজনক মনে হয় না)

Health Benefit

19. Do you always read Medicine information Leaflet before buying medicine? (আপনি কি সবসময় ওষুধ কেনার আগে ওষুধ সংক্রান্ত তথ্য লিফলেট পড়েন?)

a) Always (সবসময়)

b) Sometimes (মাঝেমধ্যে)

c) Never (কখনই না)

20. Do the information provided in Medicine information Leaflet influences your buying option? (মেডিসিন তথ্য লিফলেটে প্রদত্ত তথ্য আপনার কেনার বিকল্পকে প্রভাবিত করে?)

a) Yes (হ্যা) b) NO (না) c) Not Sure (নিশ্চিত নই)

21. Do you notice any differences any difference between the verbal instruction from doctor and information provided on a Medicine information Leaflet (For Ex: Dosase, Dose interval, Side effects) (আপনি কি ডাক্তারের মৌখিক নির্দেশ এবং মেডিসিন তথ্য লিফলেটে দেওয়া তথ্যের মধ্যে কোনো পার্থক্য লক্ষ্য করেন (যেমন: ডোজ, ডোজ বিরতি, পার্শ্ব প্রতিক্রিয়া))

a) Always (সবসময়) b) Sometimes (মাঝেমধ্যে) c) Never (কখনই না)

Fig 4.2: Survey Form

4.5 Selection of Volunteers:

There was no specific target group for the study. People of all classes, ages and locations inside Bangladesh participated in this study as a volunteer. Volunteers were informed about the purpose and aim of this survey before filling up the question paper.

4.6 Data Collection:

The total number of participants in the study was 984. Interviews conducted in-person using a self-created, structured questionnaire were used to gather data and online by using Google forms. I contacted the patients and gave them the questionnaire paper. They filled up the paper eagerly.

Chapter 5
Result & Discussion

5.1 Personal Information

A total of 984 responses were collected where 571 were male, 397 were female and 16 people preferred not to say in the study. The ages of the participants were categorized into four groups. Starting ranged from 1-15,16-30,31-45,and 45 above where more than 40% of participants were aged between 16-30.Around 14% were 1-15 years old and 31-45 years old around 30% the rest 16% were more than 45 years old. Participants' professions were also taken into account. Among them 31% were students, 14% were involved in the medical healthcare provider profession, 26% were job holders, 9% people were running their own businesses, 2% selected "others" and the rest of the 18% claimed as unemployed. 61% of the participants lived in urban areas and the rest of the 39% lived in rural regions. Among the 984 participants, 414 were undergraduate students or had degrees more than that, 338 people's highest educational degree was below graduation, and 233 people didn't respond about their highest educational degree.

Question	***Response Criteria***	***Response in number***	***Response in percentage***
Age Range	Between 1-15	121	14%
	Between 16 to 30	355	40%
	Between 31 to 45	300	30%
	More Than 45	208	16%
Living Region	Rural Area	386	39%
	Urban Area	598	61%
Profession	Student	302	31%
	Job Holder	252	26%
	Unemployed	174	18%
	Medical Healthcare Provider	135	14%
	Business	90	9%
	Others	31	2%
Gender	Male	571	59%
	Female	397	41%
Education Level	Blank	232	24%
	Not Graduated	338	34%
	Graduation or more	414	42%

Table 5.1: Responses summary of personal information

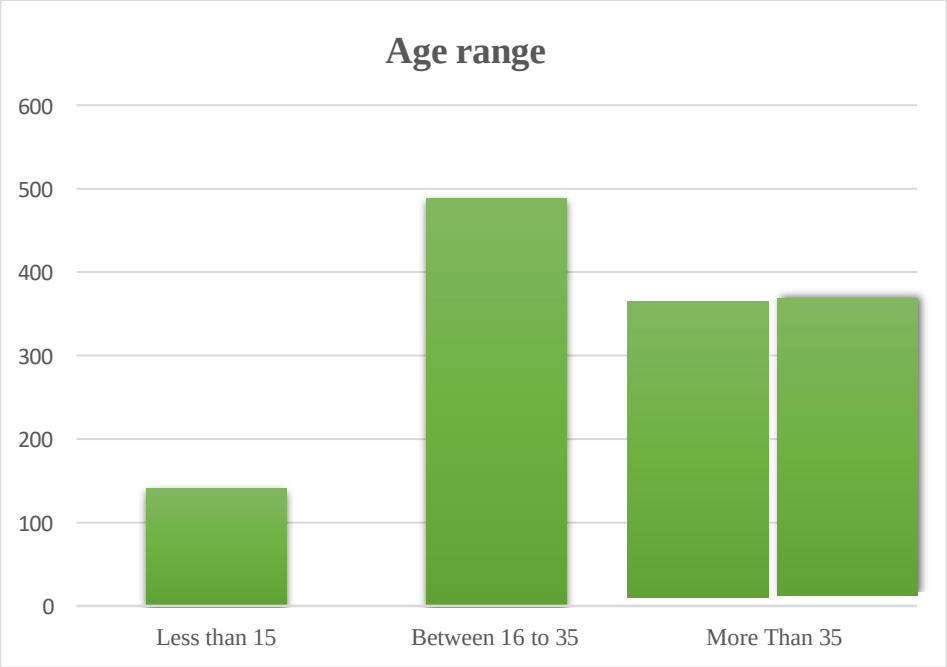


Fig 5.1: Responses of Age Range of Study Population

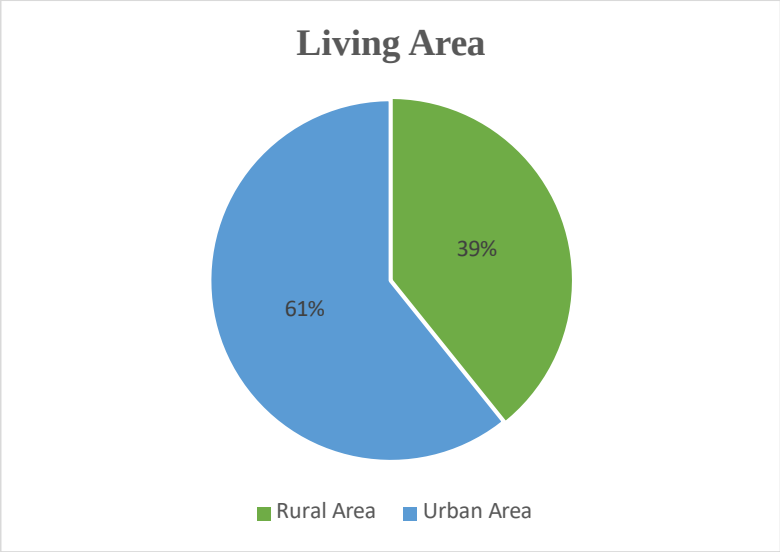


Fig 5.2: Responses of the living region of Study Population in percentage

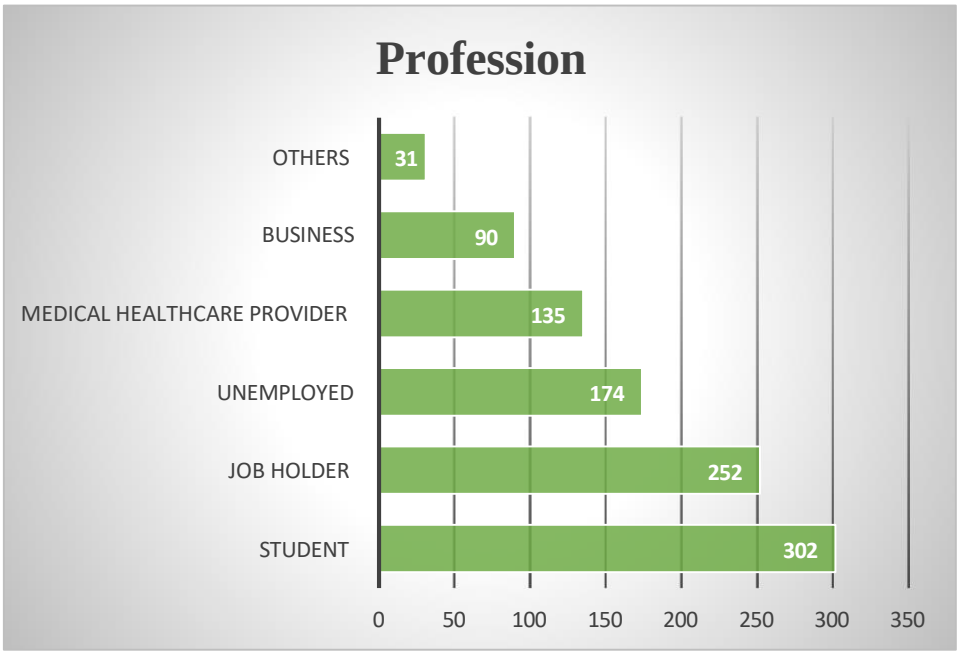


Fig 5.3: Responses of the profession of Study Population in percentage

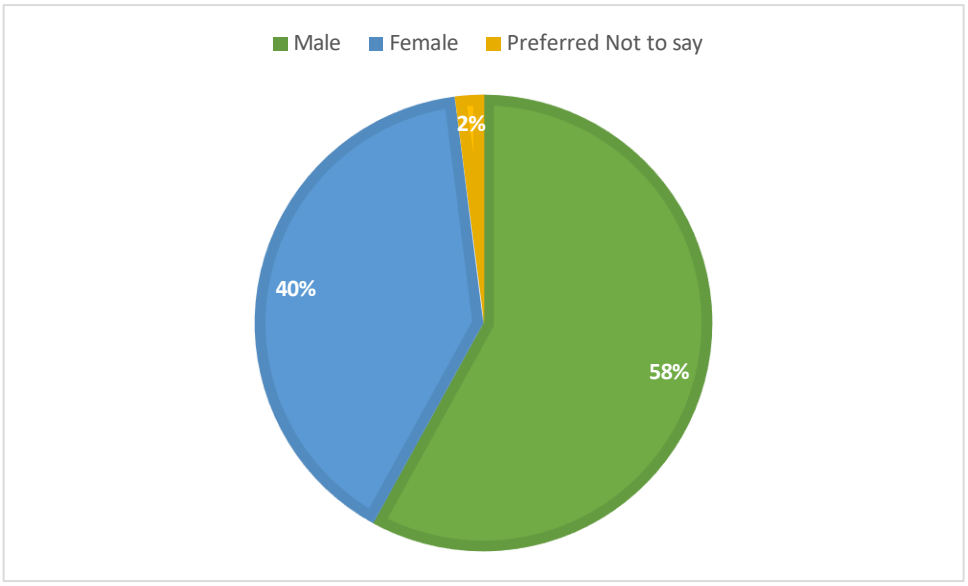


Fig 5.4: Responses of the gender of Study Population in percentage

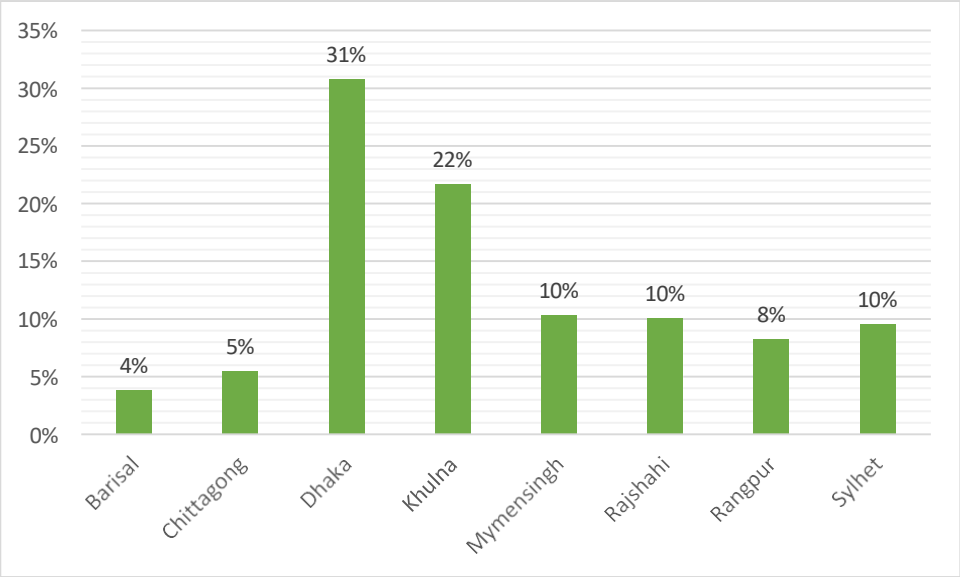


Fig 5.5: Responses of the living division of Study Population in percentage

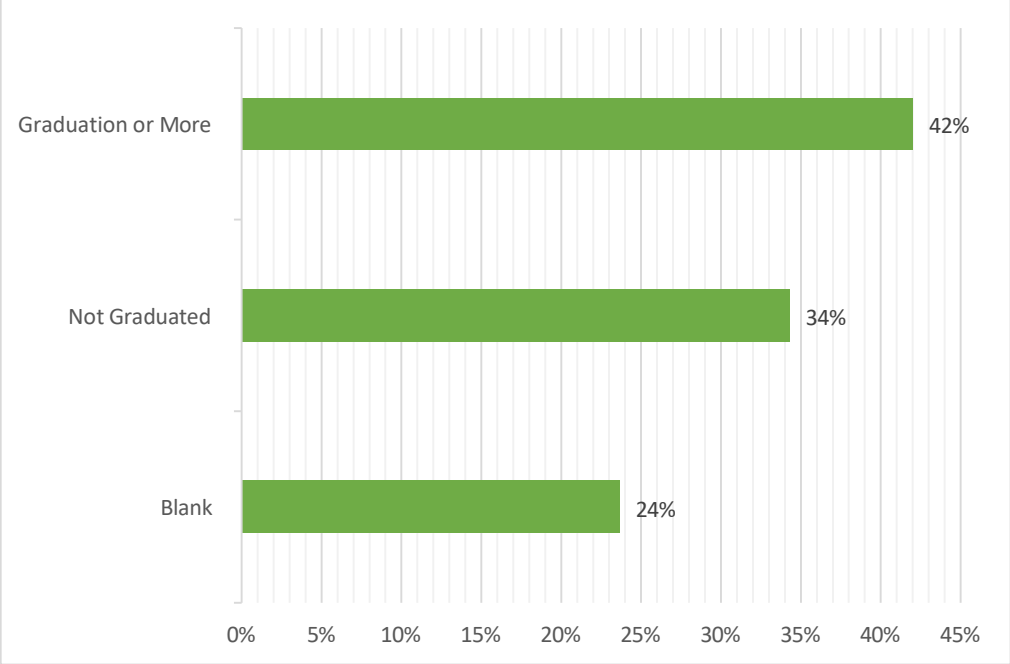


Fig 5.6: Responses of the highest education level of Study Population in percentage

5.2 Knowledge About Medical Information Leaflet

In 984 responses 699 people admitted they know about the medicine information leaflet. The rest of the 285 people didn't knew about the patient information leaflet. Around 35% of the population responded they read MIL regularly, 28% read it sometimes and the rest 37% weren't regular readers of MIL. Around 41% of the population most recently read the Medicine Information Leaflet to know about its dosage and indications. To know about side effects around 38% population read the Medicine information leaflet. And around 21% admitted they read about side effects as a prime concern. In response to the readability of medicine information leaflet, 292 people thought it easy to extract information from a medicine information leaflet around 211 people thought technical knowledge was required to understand a medicine information leaflet and the rest 481 people thought it hard to understand a medicine information leaflet. 424 people read dosage section first after receiving a medicine information leaflet, 410 people read Indication & Uses, 422 people read the side effects and 278 people admitted they read the precautions section first after getting a medicine information leaflet. The response summary is shown –

Question	***Response Criteria***	***Response in number***	***Response in percentage***
Did they know about Medicine Information Leaflet provided along with medicine	Yes	699	71%
	No	285	29%
How often did they read any Medicine information Leaflet?	Yes	340	35%
	Sometimes	280	28%
	No	364	37%
For which information they read Medicine information Leaflet most recently	To know about its dosage and indications	620	41%
	To know about side effects	587	38%
	To know about precautions	317	21%
How easy or hard you think to get the information you need from Medicine information Leaflet	It's Easy	292	30%
	It requires technical knowledge	211	21%
	Hard To Understand	481	49%
What is the first thing you notice on a Medicine information Leaflet	Indication & Use	410	27%
	Side Effects	422	28%
	Dosage	424	28%
	Precautions	278	17%

Table 5.2: Response summary of Knowledge About Medical Information Leaflet

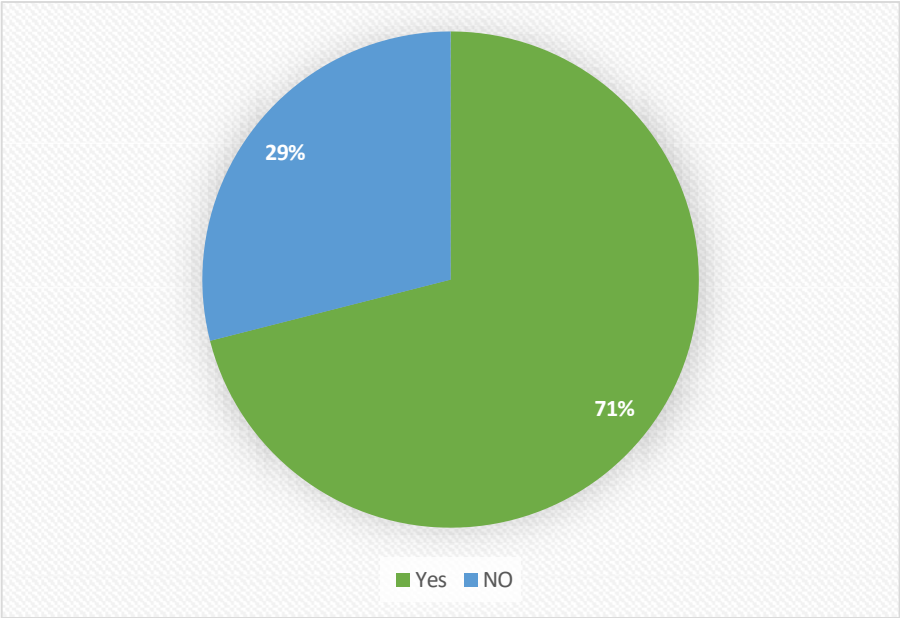


Fig 5.7: Responses of the knowledge about Medicine Information Leaflet in percentage

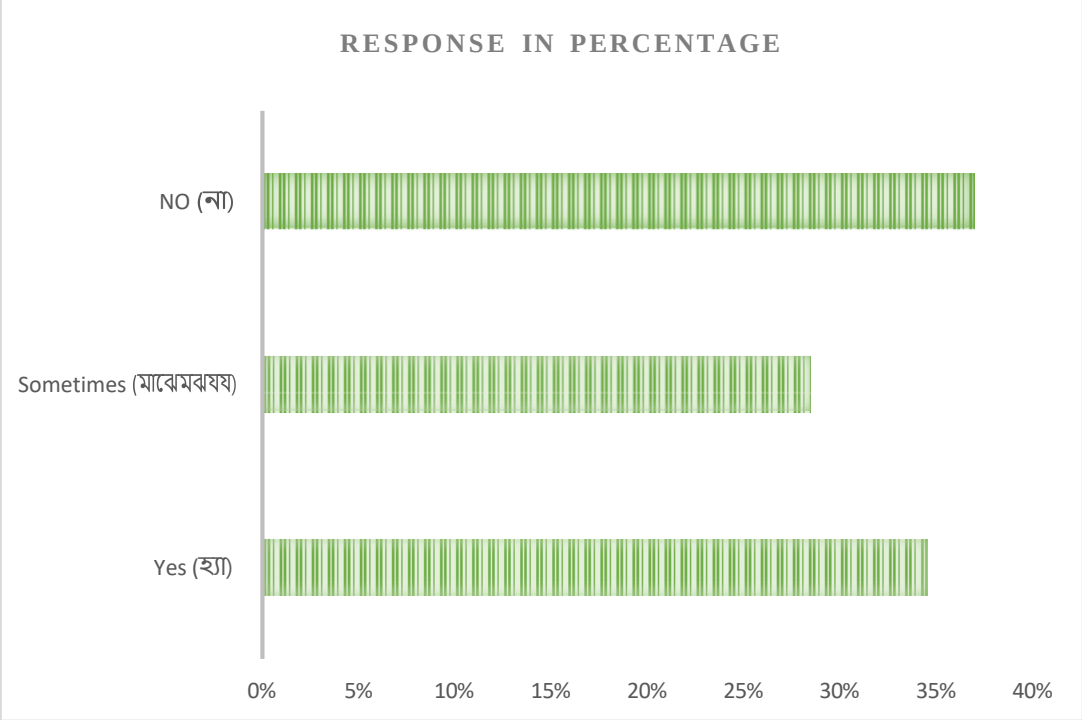


Fig 5.8: Responses of the Do they read Medicine Information Leaflet

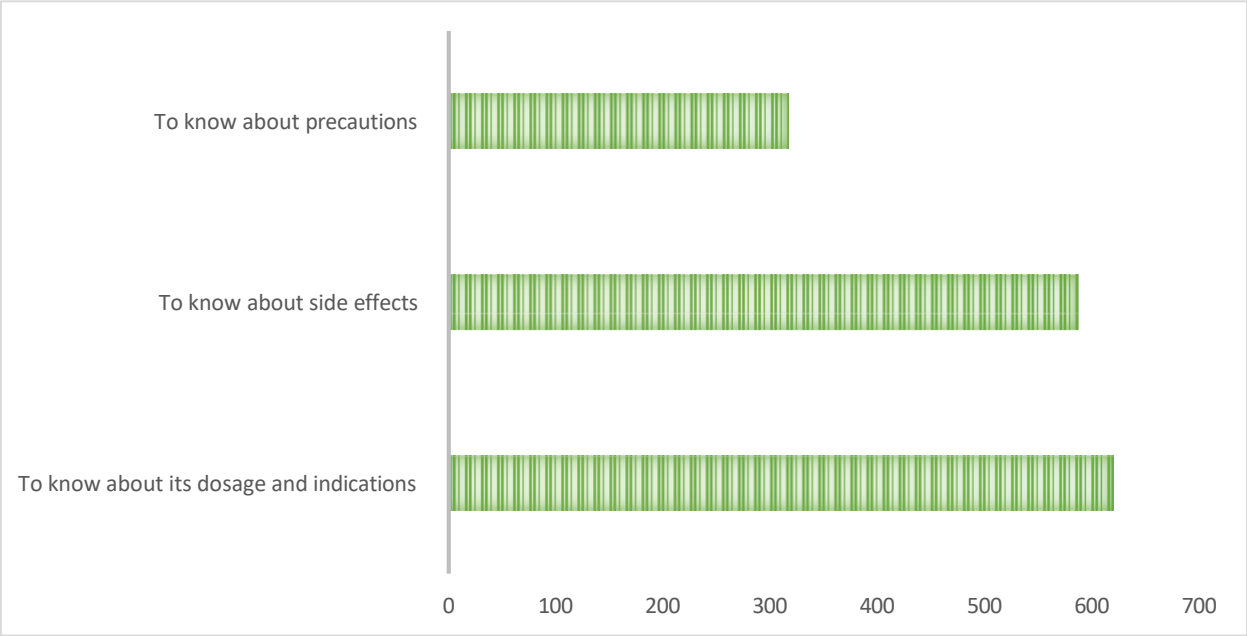


Fig 5.9: Responses of "For which information they read Medicine information Leaflet most recently"

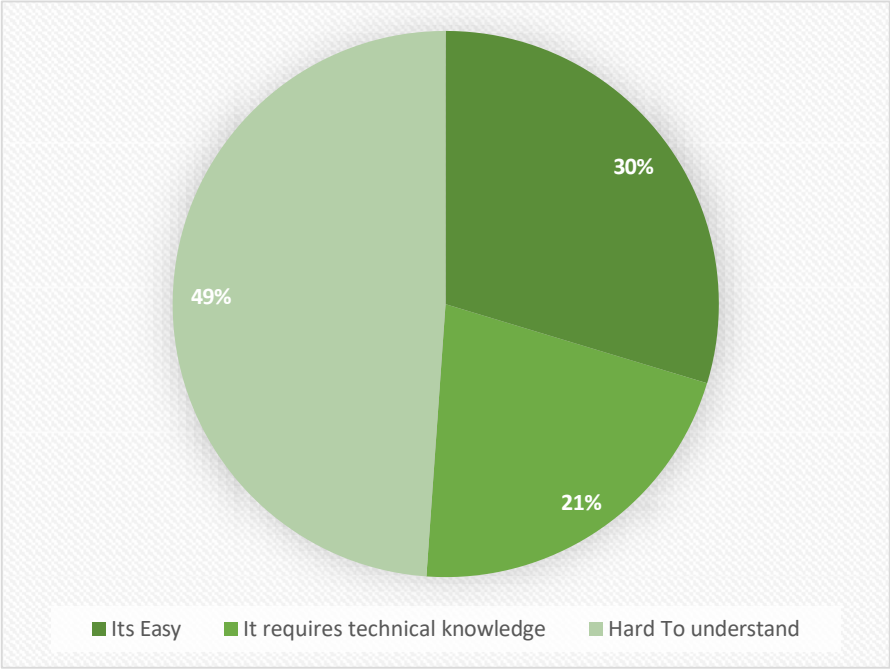


Fig 5.10: Responses of "How easy or hard you think to get the information you need from Medicine

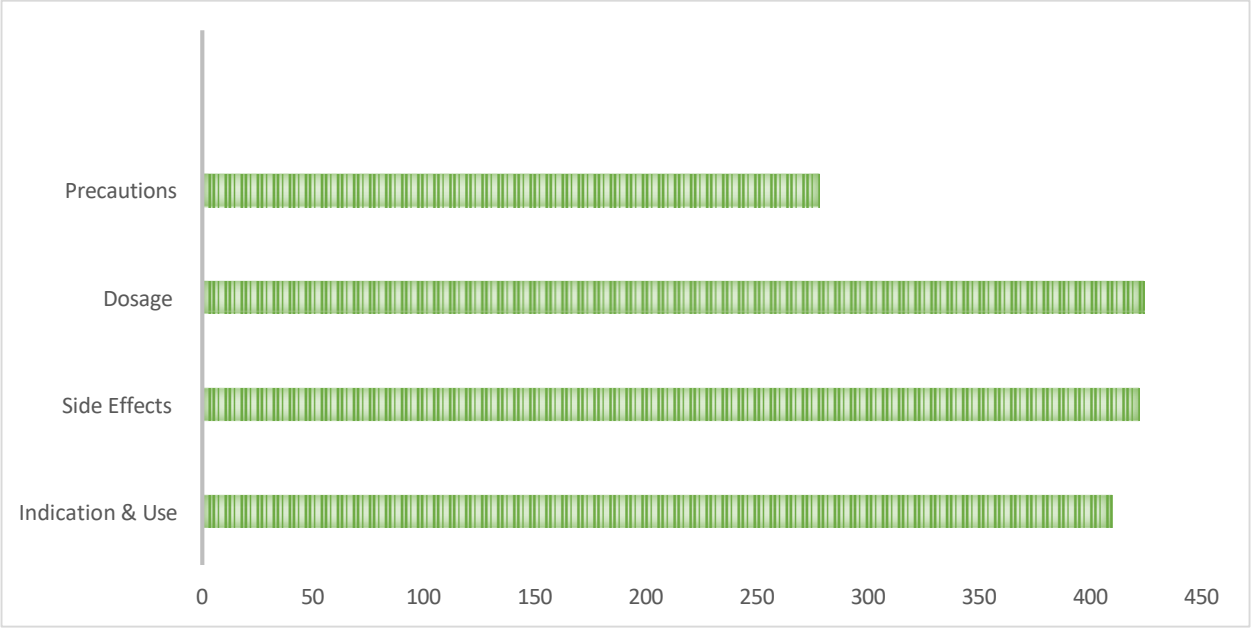


Fig 5.11: Responses of “What is the first thing you notice on a Medicine information Leaflet”

5.3 Usability & Room for improvement of Medicine Information Leaflet

In response to "How much you think Medicine Information Leaflet helps you to understand about a medicine?" around 59% of people thought Medicine Information leaflet helps them a lot to understand about a medicine. 28% thought it was not very helpful and 14% completely disagreed that the leaflet helped them to understand the medicine. Around 38% population thought there are still room for improvement in the medicine information leaflet 30% admitted they were not sure enough and the rest 32% thought no improve needed of existing format of leaflet. Around 23% of study population use digital media to collect information and 65% use Medicine information leaflet to gain information about a medicine. The rest 12% gain information about a medicine from their local pharmacy although 44% prefer digital media over offline media and the main reasons were stated as they are easy to compare with different Brands (in 558 responses), Easy Access (414 responses), Written in more easy words (423 responses).

Question	***Response Criteria***	***Response in number***	***Response in percentage***
How much you think Medicine Information Leaflet helps you to understand about a medicine	Helps me a lot	576	59%
	Not much helpful	273	28%
	Not At all	135	14%
Do you think there is a scope for improvement of Medicine Information Leaflet?	Surely, I believe	377	38%
	No improvement is needed	313	32%
	Not much sure about it	294	30%
Which media you use most to gain information about Medicine?	Digital Media	225	23%
	Medicine information Leaflet	641	65%
	Local Pharmacy	118	12%
Which media do you feel is more convenient to use and gain information?"	Digital Media	434	44%
	Offline Media	550	56%
If you think Digital media is more convenient, why you feel so?"	*Easy for comparison with different Brands*	558	35%
	Easy Access	414	26%
	Don't think digital media is helpful	220	14%
	Written in more easy words	423	26%

Table 5.3: Response summary of Usability & Room for improvement of Medicine Information Leaflet.

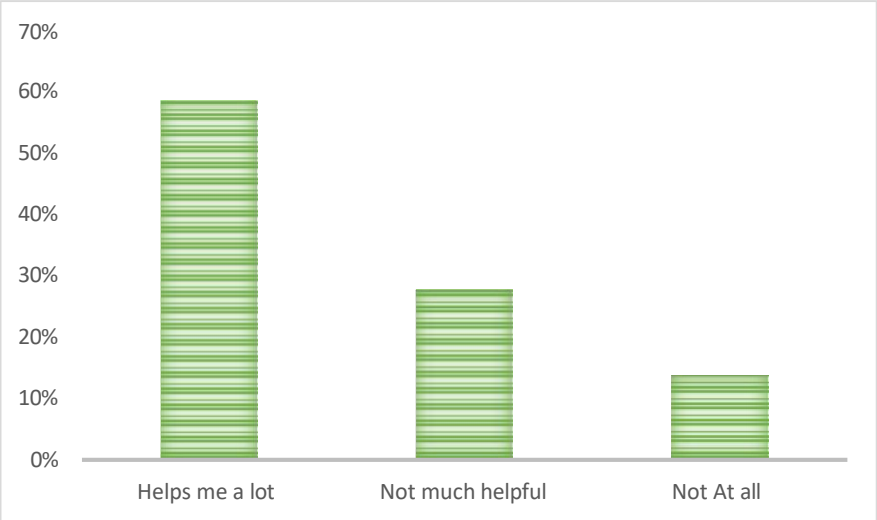


Fig 5.12: Responses of "How much you think Medicine Information Leaflet helps you to understand

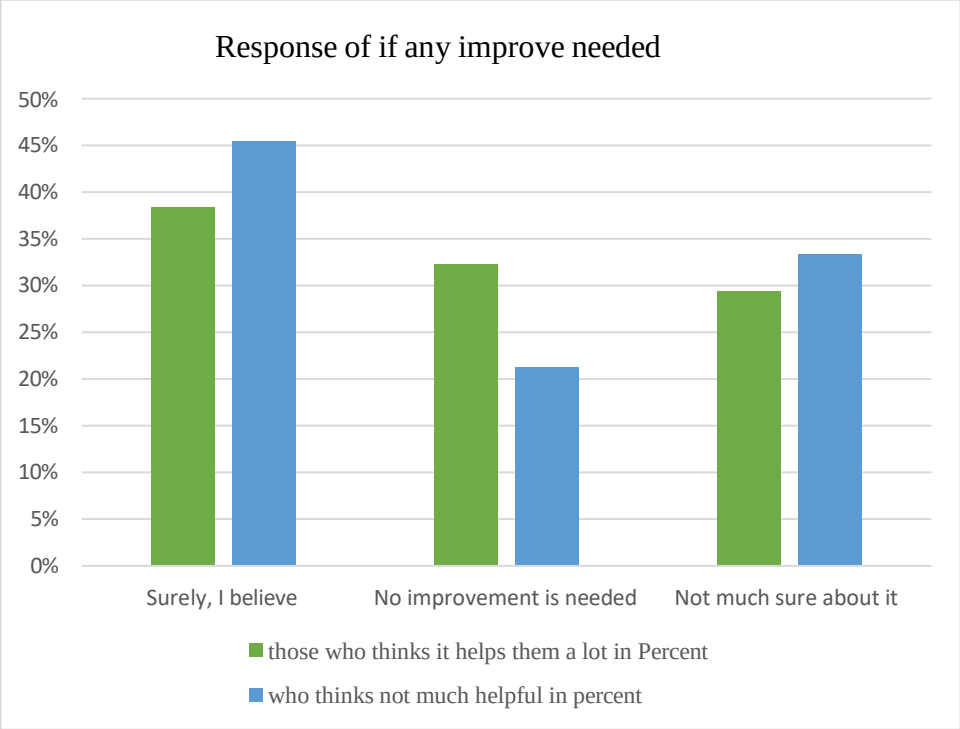


Fig 5.13: Responses of "Do you think there is a scope for improvement of Medicine Information Leaflet?

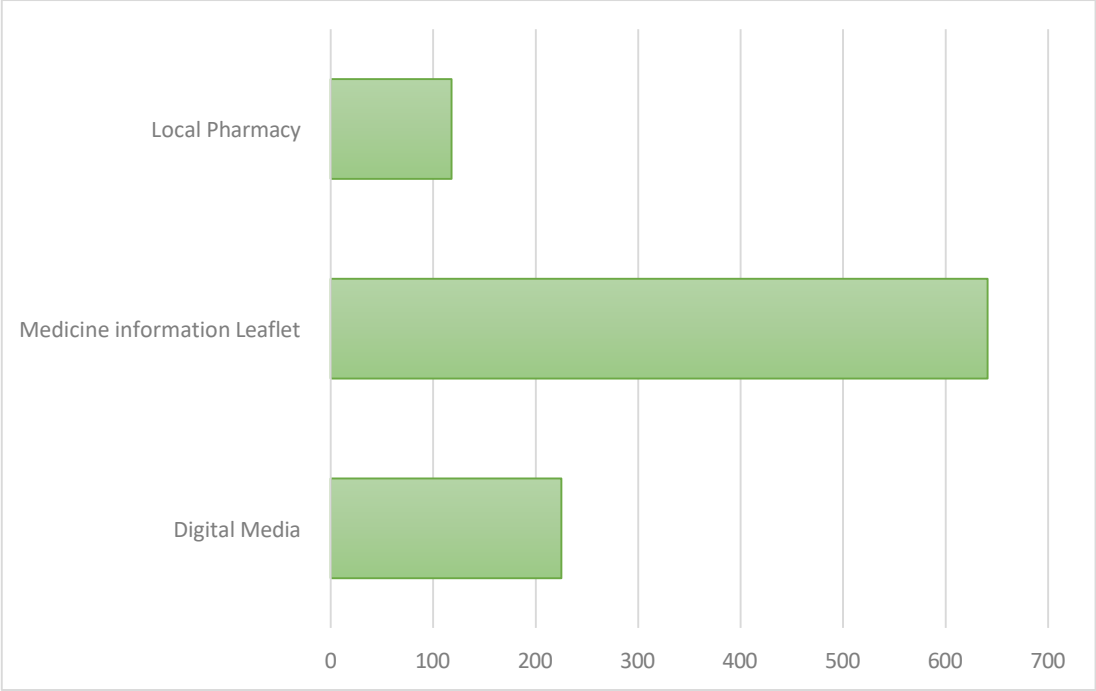


Fig 5.14: Responses to "Which media do you use most to gain information about Medicine?"

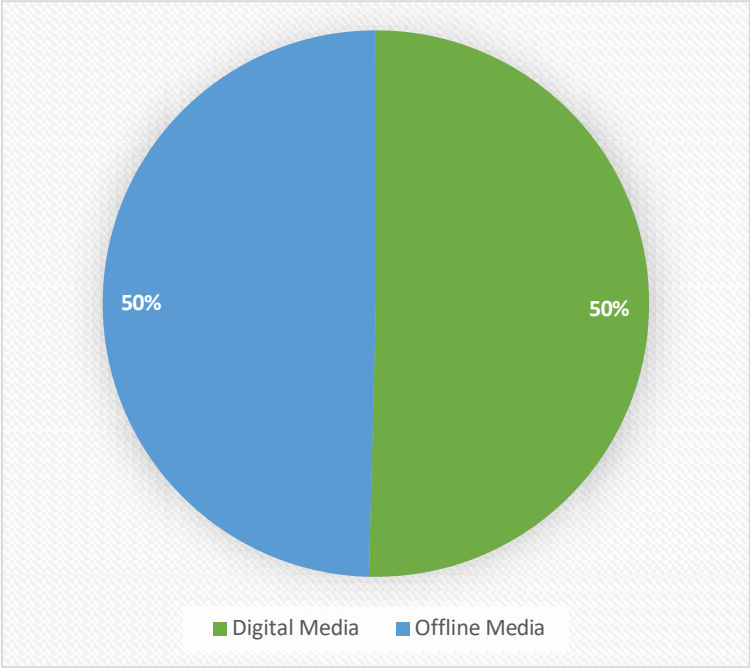


Fig 5.15: Responses to "Which media do you feel is more convenient to use and gain information?"

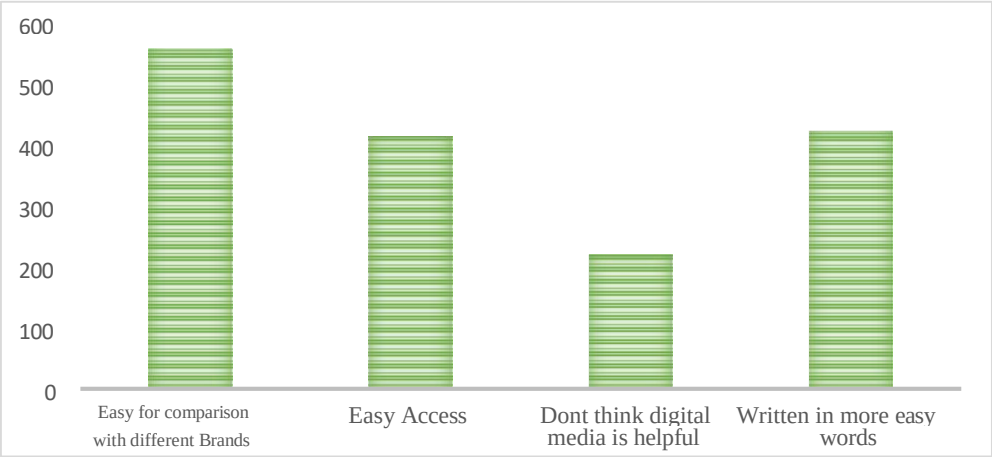


Fig 5.16: Responses to “If you think Digital media is more convenient, why you feel so ?

5.4 Health Benefit

In the study around 38% population admitted they always read medicine information before buying a medicine, 29% people read sometimes but not always but 33% people in general never bother reading medicine information before buying them. Among the study group 28% people thought that reading medicine information leaflet influences their buying option, 38% admitted it influences sometimes but the rest 35% don't think this information influences their buying option. And lastly, 416 people from 984 study group notices differences between verbal instruction and information provided in the medicine information leaflet but 163 people confirmed that they noticed no dissimilarities between information provided in the medicine information leaflet and the verbal instruction from the healthcare provider.

Question	***Response Criteria***	***Response in number***	***Response in percentage***
Do you always read Medicine information Leaflet before buying medicine?"	Sometimes	326	33%
	Never	289	29%
	Always	369	38%
Do the information provided in Medicine information Leaflet influences your buying option?	Not Sure	371	38%
	No	341	35%
	Yes	272	28%
Do you notice any differences any difference between the verbal instruction from doctor and information provided on a Medicine Information Leaflet	Sometimes	405	41%
	Never	163	17%
	Always	416	42%

Table 5.4: Response summary of health Benefits of MIL

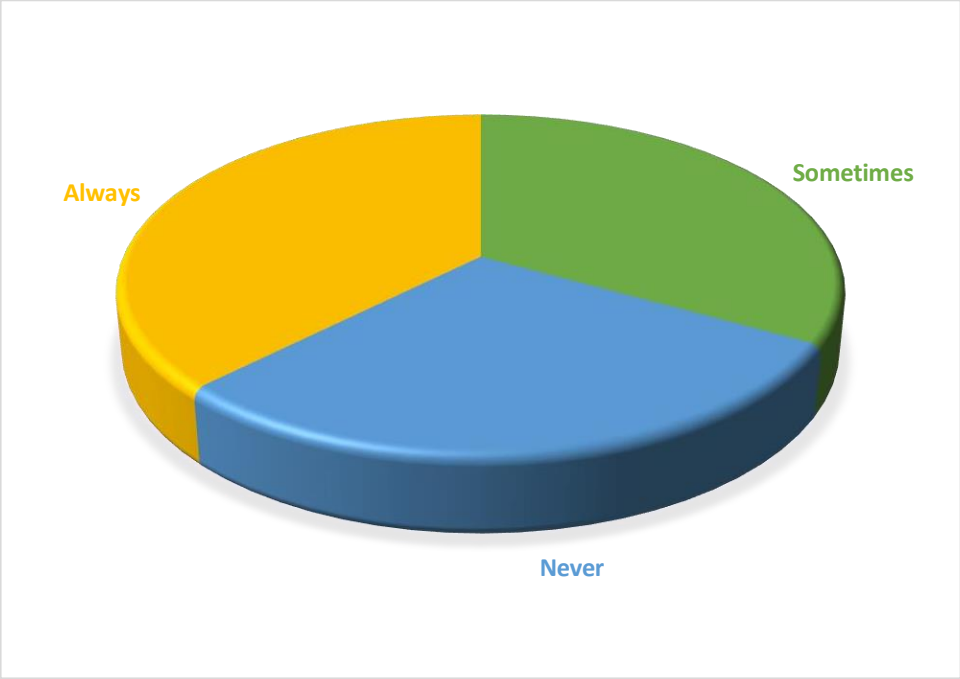


Fig 5.17: Responses to “Do you always read Medicine information Leaflet before buying medicine?”

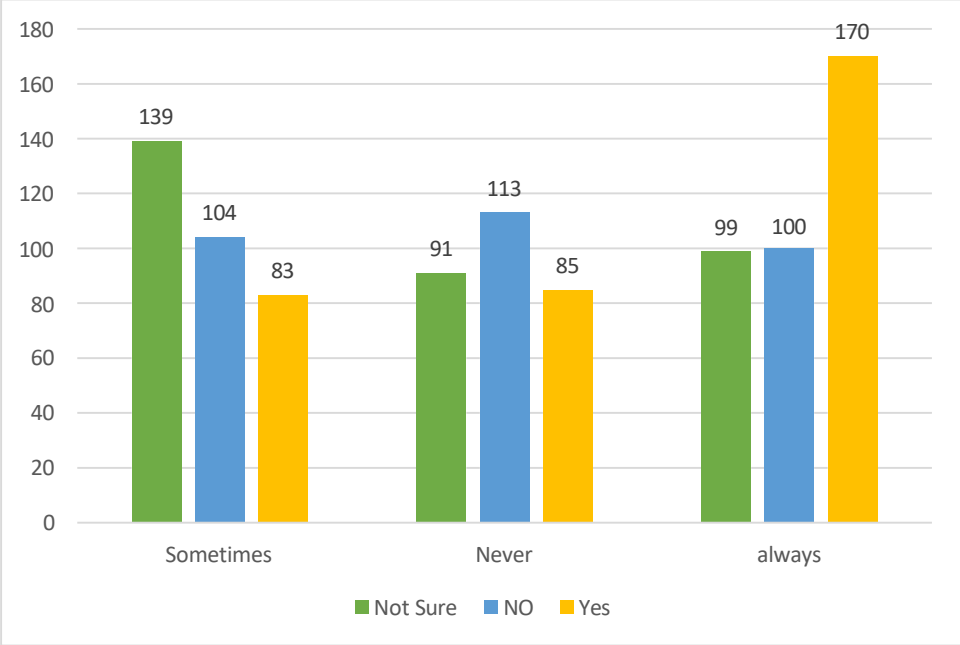


Fig 5.18: Responses to “Do the information provided in Medicine information Leaflet influences your buying option?”

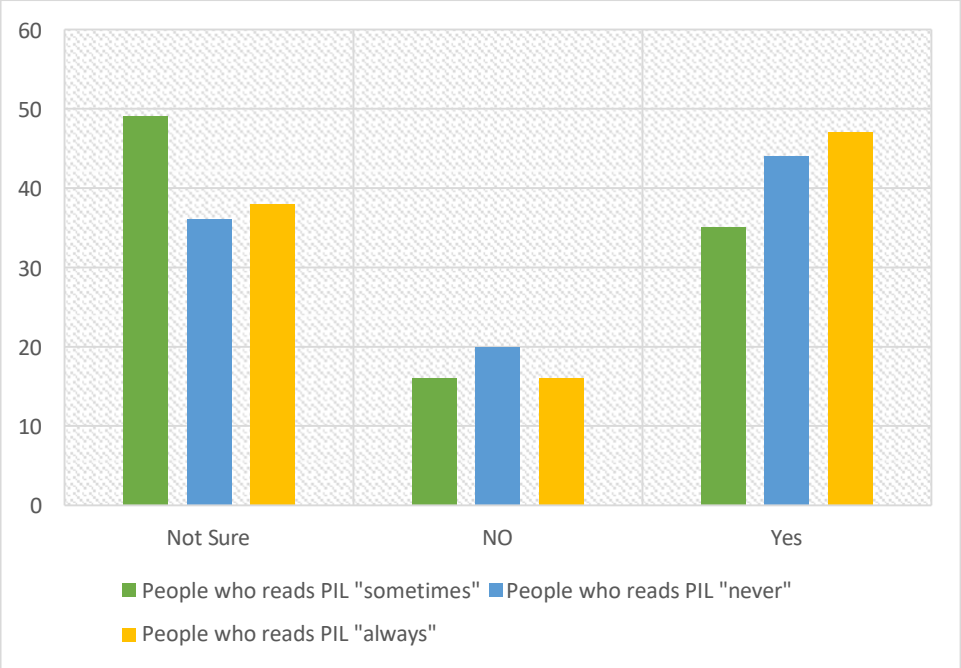


Fig 5.19: Responses to "Do you notice any differences any difference between the verbal instruction from doctor and information provided on a Medicine Information Leaflet (For Ex: Dosage, Dose interval, Side effects)?"

5.5 Discussion:

A patient information leaflet (PIL) provides crucial details about a drug or medical device to patients. Various studies have evaluated the utility of these leaflets and their impact on the general public globally . A recent study involving 984 diverse participants from Bangladesh aimed to assess the effect of PILs on public health, the current distribution practices, development opportunities for PILs, and the health benefits they provide .

Participants were selected through an online form and direct discussions using a structured questionnaire. Out of 984 respondents, 397 were female and 571 were male, with ages categorized into three groups. Over 50% of participants were between 16 and 35 years old. Education-wise, 338 had less than a graduation degree, while 414 were undergraduates or had higher degrees. This diverse sample indicates a broad representation of socio-demographic backgrounds .

Participants came from both rural (39%) and urban areas, with a male-female ratio of 59:41. Occupations varied, including students (31%), job holders (26%), businesspeople (9%), and healthcare providers (14%), reflecting opinions from numerous socio-demographic groups .

The study aimed to evaluate knowledge about PILs. It found that 699 out of 984 respondents were aware of PILs. Awareness was higher among those with a graduation degree (85%) compared to those without (63%). Urban residents had higher awareness (73%) compared to rural residents. About 35% of participants read PILs regularly, 28% occasionally, and 37% never did. Urban residents were more likely to read PILs (63%) compared to rural residents (37%) .

Regarding the use of PILs, 41% read them for dosage and indications, 38% for side effects, and 21% for other concerns. However, many found PILs difficult to understand; 292 thought they were easy, 211 believed technical knowledge was needed, and 481 found them hard to comprehend . This suggests PILs are more geared towards healthcare professionals than common patients. Among healthcare providers, only 63 out of 135 found PILs easy to understand .

Understanding the usability and improvement scope of PILs was another crucial aspect of the study. Over 40% of respondents felt PILs offered little help in understanding medication. However, 38% and 45% of those who found PILs helpful or not, respectively, believed there should be improvements .

Digital media emerged as a significant source of medication information, with 23% using it, and 44% finding it more convenient than traditional media. Urban residents preferred digital media more (62%) compared to traditional media (38%). Digital media was favored for easy comparison (35%), access (26%), and understanding (26%) .

More than 70% of participants read the PIL before buying medicine sometimes or always. Among the 369 who always read PILs, 170 felt it influenced their purchasing decisions. However, 317 thought PILs did not influence their buying decisions, with 100 reading PILs regularly and 104 sometimes. This indicates a significant gap between those who read PILs regularly and those who do not. Those who read PILs are more conscious and can differentiate between brands and generics, impacting public health positively.

Additionally, 416 participants noted differences between PIL instructions and those from physicians or pharmacies, with 70% of these individuals reading PILs regularly or sometimes .

Overall, the study found that PILs help people understand their medications better, making them more aware of different brands and generics, which positively impacts public health. However, the technical nature of PILs often deters common people, particularly in rural areas and among those with lower education levels. Simplifying PILs could attract more readers, improving public health in Bangladesh,

Chapter 6
Conclusion

6. Conclusion

A survey expectation and provision on medicine information leaflets and its impact on public health in Bangladesh is conducted among the general people of Bangladesh eying to observe common people's understanding, knowledge and how much people are getting benefitted from the PIL. On the survey, the result showed although most of the people know about PIL most of them don’t read that often. The main reason for not having an interest in PIL lies in its complexity and high technical in a lot of cases. The rural and undereducated people are the main sufferers.

A lot of people also like digital media over traditional one because of their simplicity and comparability. According to the survey medicine information leaflet often influences people's buying decision and make them aware of the medication.

This indicates PIL can influence people and increases their knowledge and awareness which improves their health and eventually public health. A further study can be carried out to determine how current practice can be developed to more towards patient-oriented so that common people can benefit more from it.

Chapter 7
Reference

7.0 Reference:

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