

Research Project on the topic

**Study on the knowledge and attitude of consumers towards
NSAIDs**

Submitted to

**Dr. Saurabh Kumar Banerjee
Dean & Associate Professor
IIHMR UNIVERSITY, JAIPUR**

Supervised by

**Dr. Saurabh Kumar Banerjee
Dean & Associate Professor
School of Pharmaceutical Management
IIHMR UNIVERSITY, JAIPUR**

Submitted by

**Nishtha Vivek Agarwal
Master of Business Administration
in Pharmaceutical Management
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IIHMR UNIVERSITY, JAIPUR

CERTIFICATE

This is to certify that the project entitled “Study on the knowledge and attitude of consumers towards NSAIDs.” submitted in partial fulfilment of the requirement for the degree of Master of Business Administration in IIHMR, Jaipur embodies the original work carried out by **Nishtha Vivek Agarwal** under my supervision at School of Pharmaceutical Management, IIHMR University, Jaipur.

The work has not been submitted in part or full for the award of any other diploma/degree in any other university in our knowledge.

Supervisor:

Dr Saurabh Kumar Banerjee

School of Pharmaceutical Management

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Nishtha Vivek Agarwal

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Background

The pharmaceutical enterprise discovers, develop, and do the producing of medicine and medicinal drugs through authorities and personal companies. In the contemporary-day technology of the pharmaceutical enterprise, they isolate and purify the compounds and do chemical synthesis and do computer-aided drug layout of the compounds. Researchers Identify the brand-new drug targets, reaching regulatory approval from authorities' organizations, and follow unique strategies in drug discovery and improvement are the principle demanding situations that face through the pharmaceutical enterprise in today's time. The non-stop development of the pharmaceutical enterprise assisting withinside the manage and removal of sickness across the world. [1]

Over-the-Counter (OTC) Drugs that means the ones Medicine that have prison permission of promoting with the aid of using pharmacists with none want for a prescription. In Indian market over-the-counter tablets is depending on customer mind-set like self-medication, product innovations, and leaning of pharmaceutical businesses closer to OTC tablets from pharmaceuticals are increasing. [2]

Non-steroidal anti-inflammatory drugs (NSAIDs) are the various maximum, not unusual place medicinal drugs used to deal with acute ache related to quite a few conditions, including headache, muscle injury, dental ache, sore throat, and dysmenorrhea. They also are used to deal with persistent aches or infections related to long-time period conditions, including rheumatoid arthritis and osteoarthritis. NSAIDs are to be had without a prescription as over the counter (OTC) merchandise in lots of countries, that could have contributed, in part, to the upward thrust inside the intake of NSAIDs during the last 20 years [3]

Literature Review

1. Judy Mullan, Kathryn M. Weston, Andrew Bonney, Pippa Burns, John Mullan, orifice Scardinius erythrophthalmus did analysis on client data regarding over the counter NSAIDs: they don't grasp what they don't know.
They did Associate in Nursing investigation on consumers' knowledge about normally bought over the counter (OTC) product containing ibuprofen. They used the tactic of a brief survey by that specialize in the shoppers shopping for Nurophen and Nurophen plus. They completed the survey by 262 respondents, out of that most of them were elder than fifty years of age; were female; well-literate about health. They noted that a lot of the respondents properly knew nonsteroidal anti-inflammatory drug as a lively ingredient and its intervals between doses. They found that close to a couple of third neither knew the utmost daily dose nor its contraindications. over a half-understood potential facet effect. They over that the gaps in client knowledge, particularly regarding the maximum daily dose, contraindications and potential side effects is also putting shoppers in danger of experiencing an ibuprofen-related adverse event.[3]

2. Dawn Suman Kumar et al. did a research over Marketing OTC Pharmaceutical Products: An Analysis on Customers' Attitudes.

This study explains the clients' attitudes associate degreed behavior. The factors moving the getting behavior of consumers of over-the-counter drugs. It explains the idea of planned behavior to research the factors contributory to an individual' person call in purchasing of over the counter (OTC) pharmaceutical market. during this paper one hundred twenty over-the-counter consumers response recorded to see the acquisition of over-the-counter medicine supported price, gender, and financial gain and tried to seek out whether the preference of pharmaceutical corporations (MNCs or Indian) relies on consumer financial gain or not.[4]

3. Thinley Dorji, Kinley Gyeltshen and Krit Pongpirul did a research over Rational use of paracetamol among out-patients in a Bhutanese district hospital bordering India: a cross-sectional study.

This study worked on assess what the Bhutanese population is aware of regarding the indications to be used of paracetamol, safe use, and customary patterns of usage (frequency, dosage). This study was done on Bhutanese living in Phuentsholing, city at Bhutan-India border. Among 441 respondents, 72.1%reported having used paracetamol within the past one year. The mean data score was 57.6%; 6.8% participants had "good knowledge." They rumored that 41.3% had a "good angle "towards use of paracetamol. 4.8% respondents knew the right dose. 61.2%knew about facet effects and potential allergic reactions.[5]

4. Dr. C. Kathiravan et al. did a study on Determinants of over the Counter (OTC) Purchasing Behavior of Medicines in the Pharmaceutical Industry.

In this paper Consumer response recorded to determine the buying decision on previous experience, advice of the pharmacist and the information written on the prospectus, television advertisements and other promotional campaigns. The most important conclusion of this paper is that both for uneducated and educated people, the purchasing decision of OTC has observed by two main factors: the recommendation by the physicians or pharmacists and Customer previous personal experience.[6]

5. Maham Tariq and Fakhar ud Din did a study on Poor knowledge of university students regarding paracetamol; a wakeup call for public healthcare practitioners.

In this analysis article, they assessed the prevalence of self-medication, level of awareness associates degreed data concerning over-the-counter medicines (specifically paracetamol) among 352 university students through structured interview method. Their survey form lined the prevalence of self-medication, practices regarding over-the-counter medicines, risk perception students at university. Their results embody indirect assessment of the knowledge among the final population furthermore because the estimation of harmful impact of over-the-counter medicines by its misuse. It points out a serious knowledge gap, low risk perception and illustrating a magnified potential of its adverse effects through.[7]

6. Abhishek Dadhich, Prof. (Dr.) Kavaldeep Dixit. did Research paper over Consumer perception and brand loyalty towards Over-the-Counter brand medicines of major pharmaceuticals companies with special reference to Rajasthan.

The study explains the buyer perception towards over the counter (OTC) medicines and factors that influence the consumer buying behavior for unlisted products. During this paper they additionally aim to check the impact of selling combine factors on consumer perception and unlisted complete loyalty. This analysis paper is descriptive in nature. It's supported primary knowledge that is collected via structured questionnaire. Within the study they use totally different variable like, dependent variables i.e., consumer perception and brand loyalty and freelance variables i.e., consumer self-medication and unlisted marketing mix factors are considered. They ascertained in this paper i.e., gift study that unlisted promoting combine factors like Place, worth and Promotion has positive impact on shopper perception and unlisted complete loyalty and self-medication practices have negative impact. The study additionally discusses that Place, Product availability, worth and Promotions are the most important influencing consider considering consumer unlisted medication buying behavior. [8]

7. C.K.S. Ong, DDS, PhD, P. Lirk, MD, C.H. Tan, MD, PhD, and R.A. Seymour, DDS, PhD did a study on An Evidence-Based Update on Nonsteroidal Anti-Inflammatory Drugs.

The paper provides a quest on an academic update on the proof of the effectuality and adverse effects of NSAIDs. It aims find answers of problems like clinically vital variations within the efficacy and safety between the various NSAIDs. If there are differences, that are simpler and related to less adverse effects. They additionally found the effective therapeutic approaches that might scale back the adverse effects of NSAIDs.[9]

8. Supakanya Wongrakpanich, Amaraporn Wongrakpanich, Katie Melhado, and Janani Rangaswami did a research over A Comprehensive Review of Non-Steroidal Anti-Inflammatory Drug Use in The Elderly.

In the paper it is stated that, NSAIDs are highly effective class of drug for pain and inflammation; but they are known for various adverse effects, like gastrointestinal bleeding, cardiovascular side effects, and nephrotoxicity induced by NSAID. They reviewed the pharmacodynamics and pharmacokinetics, guidelines for NSAIDs use, adverse effect profile, and drug interaction of NSAIDs and commonly used medications in the elderly. They mentioned it is important to have comprehensive knowledge of this class of medication especially in elderly population. [10]

9. Nuru Abdu, Asmerom Mosazghi, Samuel Teweldemedhin, Luwam Asfaha, Makda Teshale, Mikal Kibreab, Indermeet Singh Anand, Eyasu H. Tesfamariam, Mulugeta Russom did a study on Non-Steroidal Anti-Inflammatory Drugs (NSAIDs): Usage and co-prescription with other potentially interacting drugs in elderly: A cross-sectional study. This observe became carried out to recognize approximately the appropriateness of use of NSAIDs and to decide the threat associated with capacity interactions in elderly. Stratified random sampling layout became used and facts became amassed the use of an interview-primarily based totally questionnaire and through taking facts from prescriptions and scientific playing cards of respective sufferers. They used the descriptive and analytical records with chi-rectangular check and logistic regression through the use of IBM SPSS (model 22). 285 respondents have been enrolled withinside the observe with identical ratio of male to female. One in 4 of all respondents have been

continual NSAIDs customers and NSAIDs threat exercise became suggested in 24%.322 capacity interactions in 205 sufferers have been analyzed, out of which 97.2% have been labeled as moderate, 0.6% excessive and the relaxation have been mild. Respondents concerned in self-remedy have been greater uncovered to drug interactions. The maximum critical component to offer interest became making elderlies recognize approximately continual use of NSAIDs without gastro-shielding sellers and healing duplication of NSAIDs. [11]

10. Elvira L Massó González, Paola Patrignani, Stefania Tacconelli, Luis A García Rodríguez did a study on Variability among nonsteroidal anti-inflammatory drugs in risk of upper gastrointestinal bleeding.

Their goal become to evaluate the hazard of higher GI bleeding/perforation amongst customers of NSAIDs and to view the correlation among the hazard and the diploma of inhibition of complete blood cyclooxygenase 1 (COX-1) and COX-2 in vitro. Their effects demonstrates that hazard of higher GI bleeding/perforation that varies among man or woman NSAIDs on the doses generally used withinside the trendy population. The look at concludes that NSAIDs having lengthy plasma half-lifestyles and with a slow-launch components had been related to a extra hazard than NSAIDs with a quick half-lifestyles. [12]

Problem Statement

In India, people of all age groups have taken NSAIDs for granted and have misused them, so the problem is what attitude and mislead knowledge has made this issue happen.

Research Question

1. What is the level of knowledge that consumers have about NSAIDs?
2. What attitude does a consumer tend towards NSAIDs?

Objectives

To assess the knowledge and attitude of consumers towards NSAIDs.

Research Methods

Table 1: Research Methods

Study design	Descriptive
Data collection method	The data was collected by a semi-structured questionnaire.
Data analysis plan	Microsoft Excel was used for data cleaning and separation.
Data used	Primary data

Location of study	India
Sampling	Convenience/purposive sampling
Sample size	125
Stakeholders involved	People of age 20 years and above
Software used	Microsoft Excel, Google forms
Study duration	2 months
Ethical consideration	The data obtained in the study has only been used for the study purpose and the privacy of the respondents has been taken care of and confidentiality was strictly maintained. The study was performed only upon the approval by the mentor and the institute.
Limitation	Study design, stigmas related to the topic.

Results and Discussions

About the respondents

The study was conducted on a total of 125 participants from People of India. This group of people can read, was active on social media and through their personal experience answer questions related to NSAIDs, as questionnaire was provided in English via Google forms. In this group of people, each owns a smartphone, or an internet-enabled device, as the use of Google forms requires internet.

Demographic Questions

- Question 1**

Talking about the age group, Chart 1 shows the age group of the 125 participants.

1. Which age group you belong to?

125 responses

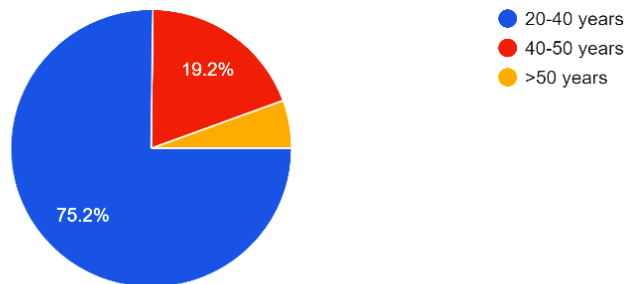


Chart 1: Shows the age group

As we can observe from the graph, that the highest participation is from the 20-40 age group, i.e., almost 75.2% of the respondents. 19.2% participation is seen from the 40-50 age group and 5.6% of respondents were found in above 50 years of age.

Next, participants were asked about their gender.

- **Question 2**

Talking about the gender ratio, Chart 2 shows the gender ratio of the 100 participants.

2. Gender:

125 responses

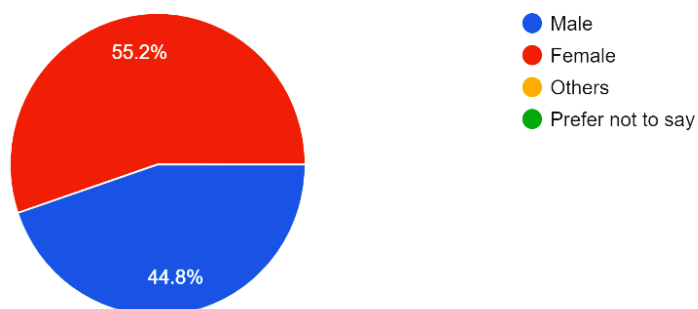


Chart 2: Shows the gender

As we can observe, the 55.2% of the respondents were males and 44.8% of the respondents were females and no respondent from other 2 options.

Responses to the Questionnaire

For ease and understanding of the respondents and for those who do not know the term NSAIDs, I took three very known drugs from the class i.e., Paracetamol, Ibuprofen and aspirin for the survey purpose.

- **Question 3**

Chart 3 depicts the question, have people heard about the mentioned drugs i.e. NSAIDs

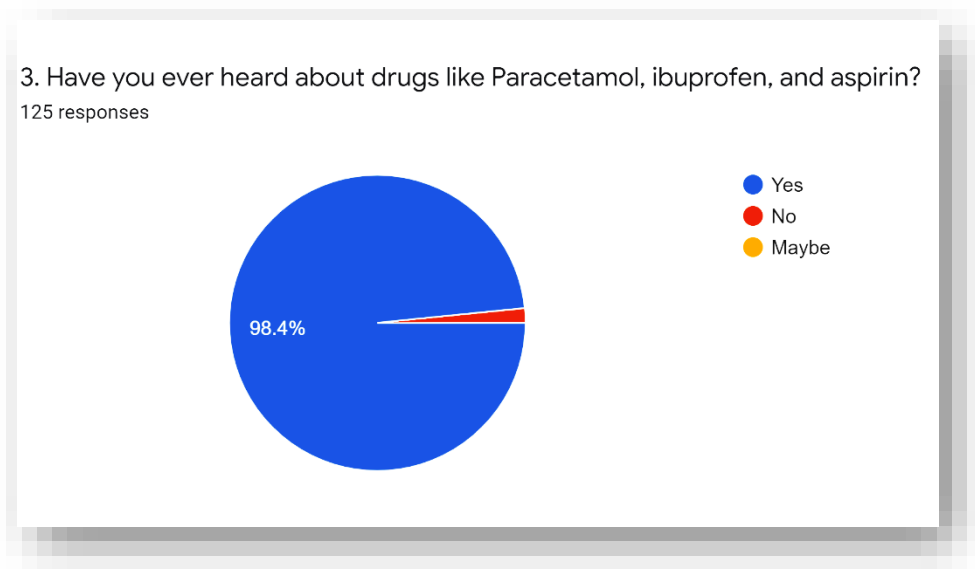


Chart 3: Shows the percentage of people who have heard about the drugs

As illustrated by the pie chart, 98.4% of the people have heard about Paracetamol, ibuprofen, and aspirin, and only 1.6% people have not heard about them.

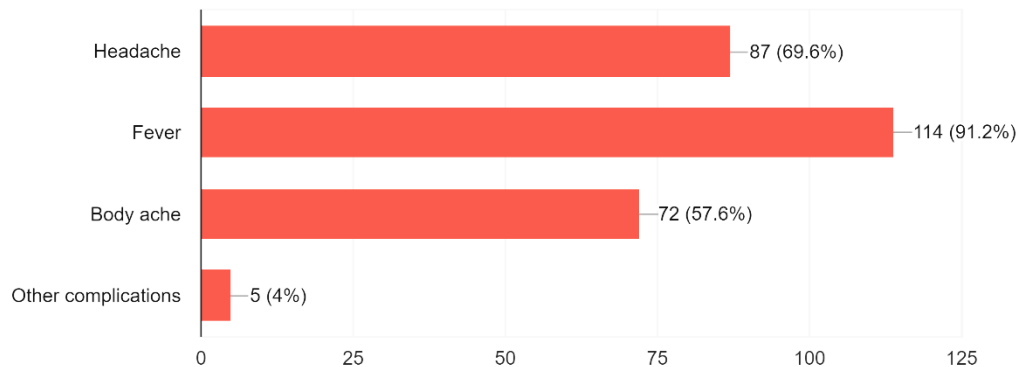
Next, the participants were asked then when do they take NSAIDs.

- **Question 4**

The graph 1 shows the bars of situations when the respondent takes NSAIDs.

4. When do you take drugs like Paracetamol, ibuprofen, and aspirin?

125 responses



Graph 1: Shows the percentage of situations in which people take NSAIDs

As the graph clears that, 87 out of 125 respondents consume NSAIDs in headache, 114 of them take these drugs in fever, 72 of them consumes in the case of body ache and 5 of 125 people take them in other complications.

Further, respondents were questioned about how they take NSAIDs, through prescription or not.

- **Question 5**

The chart 4 shows that how people take NSAIDs, through prescription or by themselves.

5. Do you take drugs like Paracetamol, ibuprofen, and aspirin through prescription or by self?

125 responses

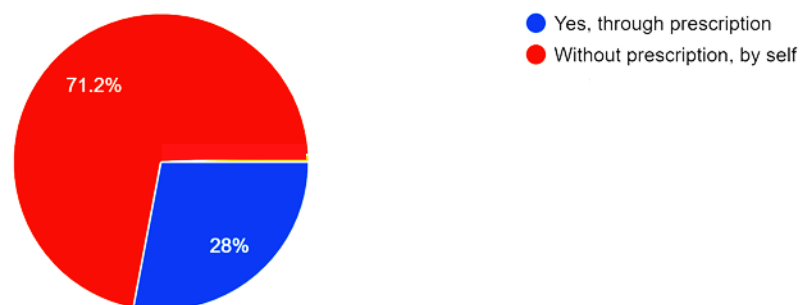


Chart 4: Shows the percentage of situations when people take mentioned drugs

The chart depicts that 71.2% people take drugs like Paracetamol, ibuprofen, and aspirin only by a prescription of any registered medical practitioners, but 28.8% people risk it by consuming without prescription.

The participants were, then asked about frequency of the drugs taken. These were the results.

- **Question 6**

The Chart 5 displays the frequency of how many doses in a day, people take of the mentioned drugs.

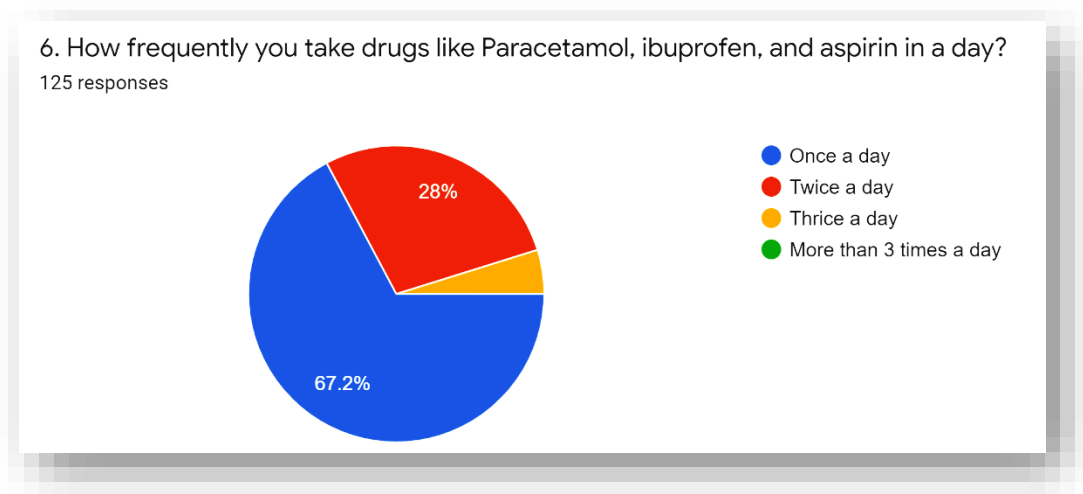


Chart 5: Shows the percentage of frequency of the drugs taken in a day

The above chart clearly shows that out of 125 respondents 67.2% people take NSAIDs only once a day, 28% people take it twice a day and 4.7% took three times a day. It clearly shows that no respondent took more than three times a day.

Further, respondents were asked about the medium i.e., by which medium they took NSAIDs.

- **Question 7**

The Chart 6 shows the media people prefer to intake NSAIDs.

7. With what medium you take drugs like Paracetamol, ibuprofen, and aspirin?

125 responses

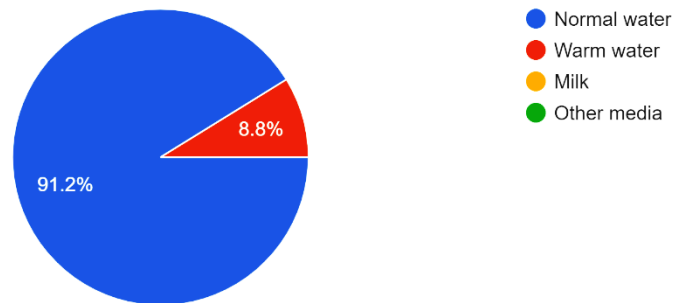


Chart 6: Shows the percentage of different media used by respondents

By the above chart depicts that 91.2% of 125 participants take NSAIDs with normal water and 8.8% people take it with warm water. No participant took it with milk or with any other media.

The next question was about Plain and combination drugs, which one is preferred by respondents. These results were found.

- Question 8**

Chart 7 shows about the preference of respondents over the combination of drugs.

8. Do you prefer drugs like Paracetamol, ibuprofen, and aspirin plain or in combination with other drugs?

125 responses

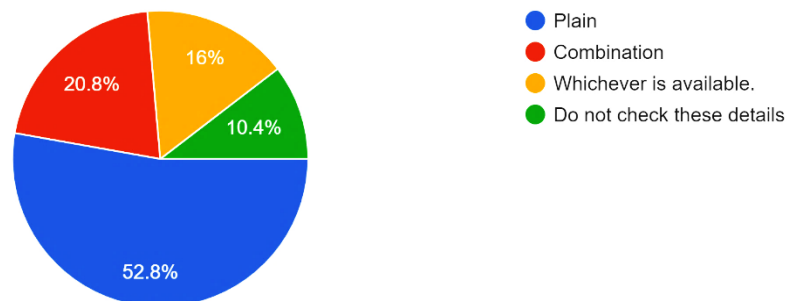


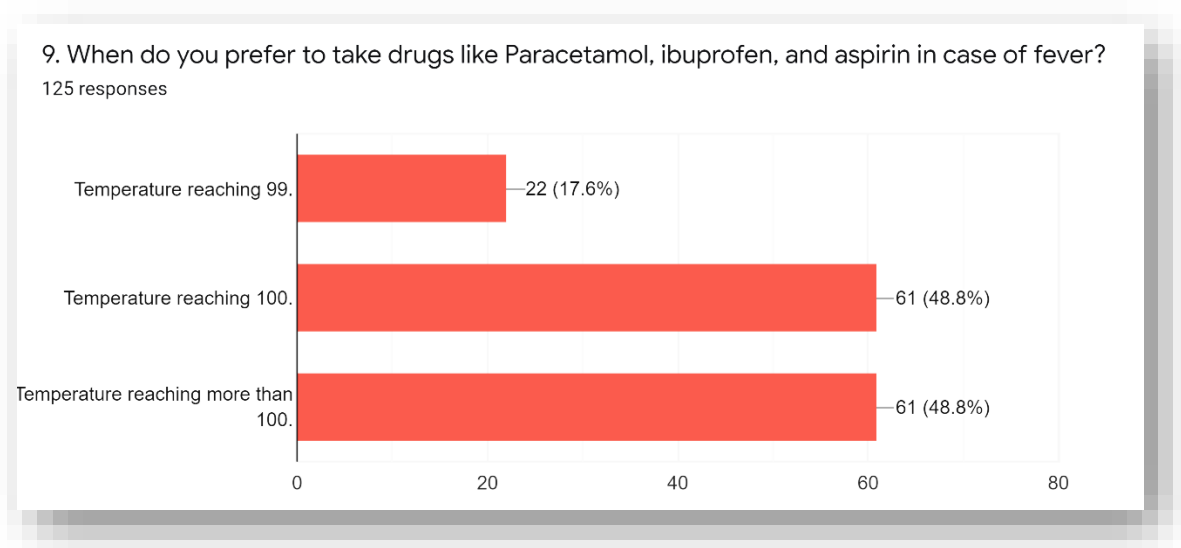
Chart 7: Shows the percentage of different preferences of people for NSAIDs

The above pie-chart shows a good amount of response on every option. But maximum was shown for the Plain drugs with 52.8% responses. Combination of drugs was chosen by 20.8% responses. 16% people out of 125 respondents were flexible to the availability of the medicines. Only 10.4% respondents never check such details.

Next question was asked on the temperature elevation as NSAIDs are useful as anti-pyretic.

- **Question 9**

The Graph 2 shows, at what level people take NSAIDs in case of elevated temperature.



Graph 2: Shows the percentage of level of different temperatures when people take NSAIDs.

As the graph shows that, 22 people out of 125 participants take NSAIDs when the elevated temperature reaches 99 degrees. Interestingly, both options of temperature reaching 100 and more than 100 got 61 responses each with 48.8% respectively.

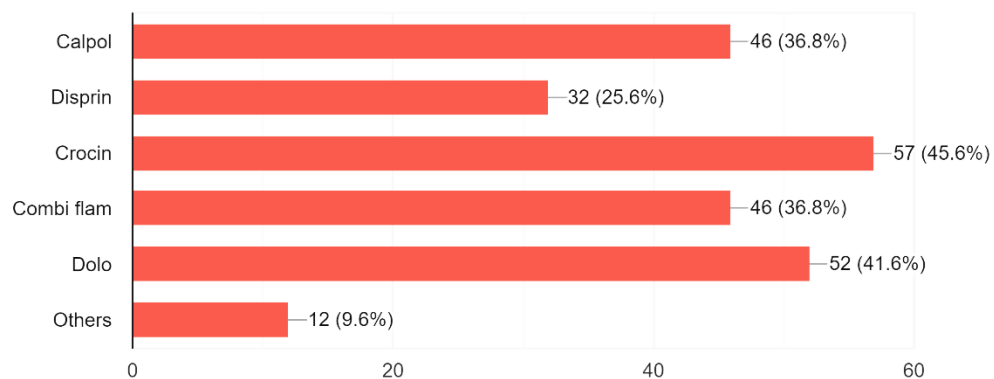
Next question captures the brands which people rely on for drugs like NSAIDs.

- **Question 10**

Graph 3 shows various brands which people have been using in complications.

10. Which over the counter drugs you rely on?

125 responses



Graph 3: Shows the percentage of NSAIDs brand preferred by the respondents

The above graph shows many variations in choice of brand by people. Out of 125 participants 57 takes Crocin. 52 people prefer to take Dolo. Calpol and Combi flam got equal choice of 46 people each. Disprin was chosen by 32 people. 12 people had other choices apart from the options mentioned.

Next question was based on the full stomach, empty stomach conditions.

• Question 11

Chart 8 shows with what type of stomach conditions people take NSAIDs.

11. When do you take drugs like Paracetamol, ibuprofen, and aspirin?

125 responses

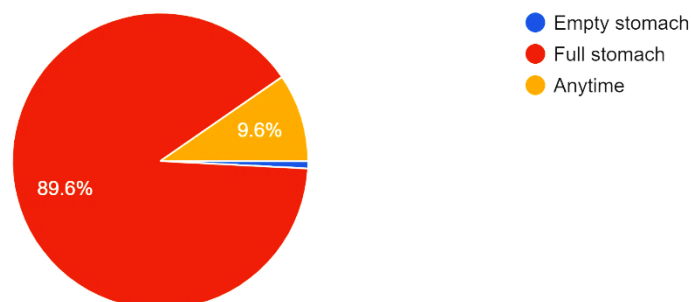


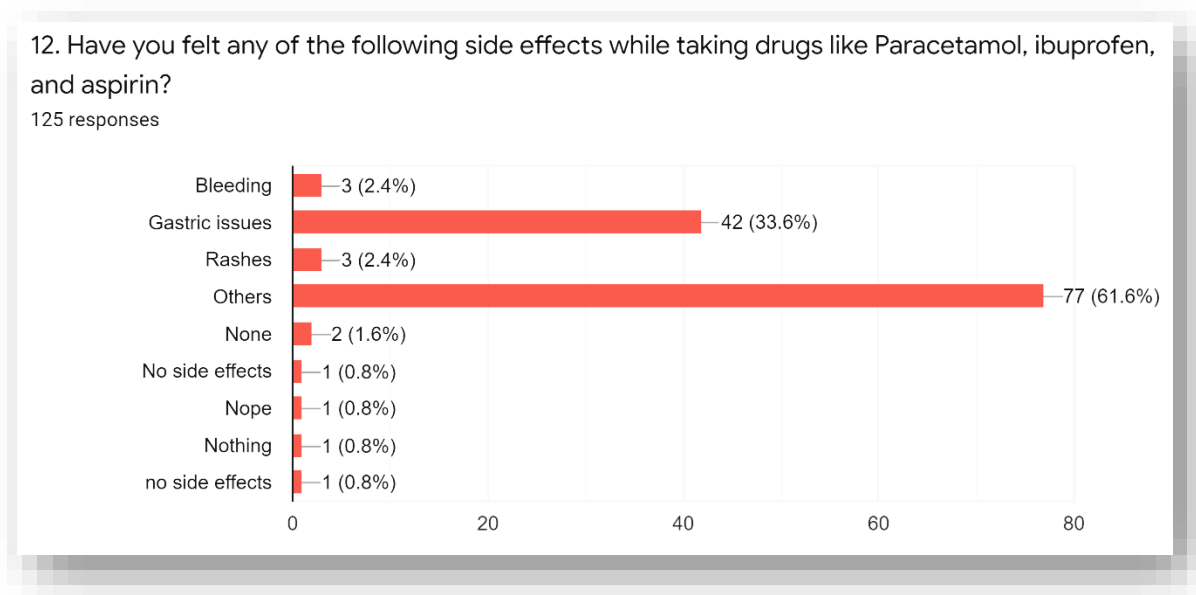
Chart 8: Shows the percentage in which stomach conditions people take NSAIDs

Pie-chart clearly shows that 89.6% people take NSAIDs only when their stomach is full. 9.6% take it anytime without any conditions specific. Only 0.8% people prefers to take empty stomach.

Further, side effects felt by the respondents were asked.

- **Question 12**

Graph 4 records various side effects causes by NSAIDs.



Graph 4: Shows the percentage of various side effects felt by the respondents

As the above graph shows that, out of 125 respondents, 77 people felt other side effects apart from the mentioned. 33.6% have felt gastric issues with the use of NSAIDs. 2.4% people, report bleeding issues. Total of 2.4% people felt no side effects.

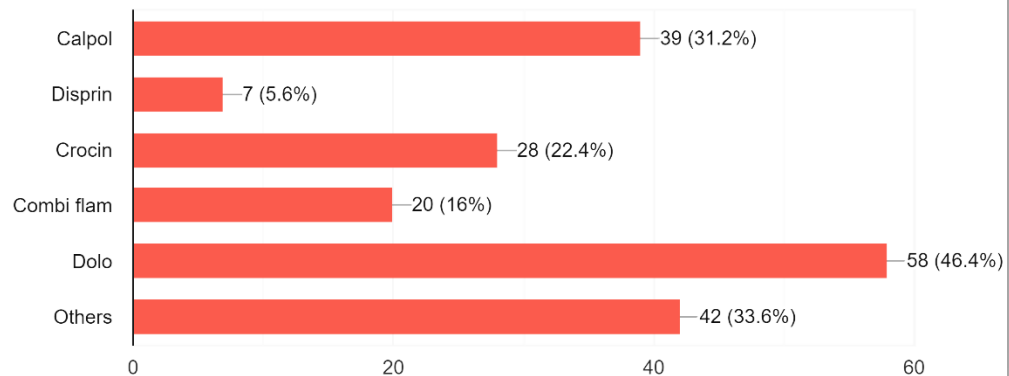
Questions specific to Covid-19

- **Question 13**

Graph 5 talks about the brands people were aware about, if got infected with Covid-19 virus.

13. Which of following drugs, you were aware of to take in covid-19 complications?

125 responses



Graph 5: Shows the percentage of brands which respondents were aware about in Covid-19 issues

The graph shows that 46.4% people tend towards Dolo, 33.6% people chose some other brand apart from the mentioned, 31.2% people preferred Calpol, 22.4% people choose Crocin, 16% people preferred Combi flam and 5.6% people opted Disprin for Covid-19 complications.

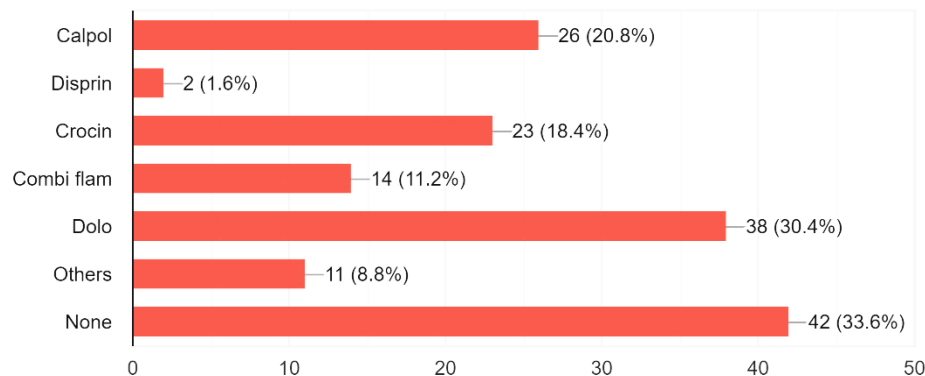
Next question was on the drugs taken for issues post vaccination of Covid-19.

- **Figure 14**

Graph 6 depicts the post Covid-19 vaccination issues solving brands preferred or taken by participants.

14. Which drug you took, if had post covid-19 vaccination fever or body ache?

125 responses



Graph 6: Shows the percentage of brands which respondents were aware or took in post Covid-19 vaccination complications

The above graph shows, out of 125 respondents 42 people didn't take any medicine, 38 of them trusted Dolo, 26 people took Calpol, 23 preferred Crocin, 14 of them had Combi flam, 11 of them tended to other drugs which are not mentioned in the options, and 2 of them took Disprin for post Covid-19 vaccination fever or body ache.

KEY FINDINGS AND CONCLUSION:

A study on 125 participants from general people of India was conducted. The participants were asked questions about their knowledge about NSAIDs. The main purpose of the study was analyzing the attitude of Indian people about NSAIDs. The findings of the study can be summarized as follows:

Primary Findings:

- According to the survey 98.4% of people have heard about NSAIDs especially, Paracetamol, Ibuprofen and Aspirin. Only 1.6 % of people have not heard about the above mentioned NSAIDs. This shows that people are aware of and have used them in many complications. It also proves that NSAIDs are available widely and have various uses in many complications because of which it is in the knowledge of maximum people.
- In the survey participants were asked that in which complications they NSAIDs, and 87 people out of 125 respondents chose headache, 114 people in 125 respondents took them in case of elevated temperature that is fever, 72 of them consumed the same drugs in case of body ache. Apart from these complications many chose the option of other

complications, which clearly shows that people tend to take these drugs in case of many other complications. This finding also sums up to the fact that NSAIDs has a wide range of its usage.

- Through these responses we can find that people prefer NSAIDs in many types of complications without even knowing that it is safe this that condition or not. That is one such demerit of wide usage drugs.
- Through this survey we found that 89 people out 125 which accounts to 71.2% people NSAIDs by themselves without any prescription. 36 people out of 125 respondents in the survey took these medicines through prescription by any registered medical practitioner. it is clearly seen how people have been easily taking NSAIDs in any of their complications. We can conclude this point by saying that the people are not aware about the major side effects of NSAIDs and risk it without a prescription.
- In this survey, the dose per day of NSAIDs specifically Paracetamol Ibuprofen and Aspirin was asked. 67.2 % people of 125 respondents took only once a day, 28% people took twice a day, open 6 people took 3 times a day and option of more than 3 times a day was left with no response. A huge amount of people aware about the frequency of the dose per day.
- According to the survey, many people are aware about that NSAIDs should be taken by water only, as 91.2% of them reacted to the option of normal water. Some of them also took by warm water as 8.8 % of 125 respondents reacted to the option of warm water. As we found that many people took NSAIDs in headache, fever and body ache, then warm water could be an indication of having complications of tonsils, in which warm water can give them some relief.
- While analyzing the data, the question for the formulation 58.2 % of 125 respondents i.e. 66 people preferred taking NSAIDs as an individual formulation only i.e. plain formulation. 26 people out of all 125 respondents like to have a combination of some drugs in one medicine. Only 15% of 125 respondents did not care about plain or combination formulation, they only take whichever drug is available easily to them. Also, 13 people of 125 respondents do not check these details of combination or plain, they clearly take the one prescribed by registered medical practitioner or relies on since years.
- The survey also covered the information of elevated body temperature i.e., the case of fever and at elevated body temperature that take NSAIDs. An equal answer was for temperature reaching 100 degrees Celsius and more as 48.8% of people chose to both the answers equally. 22 people out of 125 respondents reacted to the option that had temperature reaching to 99 degrees Celsius which proves that many people bear the

temperature when elevated to 99 degrees Celsius but when it reaches to 100 degrees Celsius or more, they prefer to take Paracetamol, Ibuprofen or Aspirin.

- According to the survey, the question about some brands which they rely on for over-the-counter NSAIDs with the very popular brands available in the market shows that all of them had almost equal amount of responses. Crocin was the most reliable drug. Next which was found reliable was Dolo. Combi flam and Calpol was equally given importance by the responses Disprin was also preferred but, in less amount, as compared to earlier mentioned drugs. Apart from these mentioned brands, there were 12 people out of 125 respondents who referred to other brands. So, it is clear enough that people rely on over the counter NSAIDs preferably to the mentioned brands and some of the others as well.
- In this questionnaire, we found that many people took self-medication of NSAIDs in complications like fever and body aches and also the found that people were very much reliable on over the counter drugs with also takes up to a point that may be people hesitate to visit doctor for such complications or consider them not to be huge enough to visit doctor.
- In the survey, questionnaire had a question of when do the respondents take NSAIDs, full stomach, empty stomach or anytime. With no Surprise we got maximum response to full stomach but there was very minute response to empty stomach as well. To the option of anytime had some good amount of acceptance. We can conclude that people are aware enough that an NSAIDs should be taken in with full stomach for their action, probably the no side effect which can be caused by then empty stomach.
- This survey included the complications like bleeding, gastric issues, rashes or any other apart from these. Maximum response was to the other complications. So, we can see that because of NSAIDs people are facing too many side effects other than bleeding, gastric issues, and rashes. Very small amount of percentage i.e., 1.6 % voted for no Side Effects. Either they haven't felt the side effects, or they must have taken it very proportionally so that not too many side effects could be responded to the body.
- The questionnaire also covered the of covid-19 complications as it is associated with the issues like headache, fever and body ache. It was asked that which of the brands of NSAIDs was taken or were aware about in case of covid-19 complications brands like Calpol, Disprin, Crocin, Combiflam, Dolo. All the brands were given almost equal response, but good amount of response has also been given to the option of others than the mentioned drugs. It is very clear that the public is either taking their reliable brands or a brand which is available in the market in case of pandemic.

- In the case of post covid-19 vaccination when people were experiencing fever or body ache many people were not in the favor of taking any medicine but to bear the little complications, but maximum of our 125 respondents took help from NSAIDs to get relief from the complications. Aspirin, Crocin, Combiflam, Dolo and many others have been given for post covid-19 vaccination for fever or body ache.

Timeline

Table 2: Gantt Chart

S.NO	ACTIVITY	TIMELINE							
		WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8
1	IDENTIFYING RESEARCH AREA								
2	LITTERATURE REVIEW								
3	PROPOSAL								
4	FORMULATING THE RESEARCH PROBLEMS								
5	DATA COLLECTION								
6	DATA ENTRY								
7	DATA CLEANING & ANALYSIS								
8	FORMULATION								
9	INTERPRETATION								
10	FIRST DRAFT								
11	FINAL SUBMISSION								

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