# A Comparative Study of Consumption Behavior of Pharmaceutical Drugs

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**Abstract.** The research is done to identify the significance of gender, profession, income and age on the consumption behavior of various classes of drugs. In this research paper a comparative study is carried out to understand about the consumption behavior of pharmaceutical drugs using primary data collected from NCR area, India through questionnaire and analyzed using R-programming. On analysis we found that antibiotics and analgesic classes of drug are most frequently used by consumers whereas consumption of significantly depends on age group. It was also found that there is no significant difference in consumption behaviour due to gender and profession. However income of the respondent is affecting consumption of newly launched drugs of same salt. These results will be helpful for pharmacy market to understand consumption behaviour of common people.

**Keywords:** Pharmaceutical drugs · Consumption behavior · Classes of drug
Consumption behavior · Consumer behavior

## 1 Introduction

A pharmaceutical drugs or medications are used in diagnosis, cure, and treatment or prevention of diseases. Medications are classified as prescription drug which is prescribed by physician and over-the-counter drugs which consumers themselves can order. Another way to classify medications are by mode of action i.e. route of administration, biological system affected, or therapeutic effects. Drug therapy is an important part of medical field and relies on pharmacology for continual advancement and on pharmacy for appropriate management. Drug development & discovery is undertaken by pharmaceutical companies, scientists, academicians and governments. Governments generally regulate what type and how drugs can be marketed. A number of classes of drugs are available in the market like antipyretic, analgesic, antimalarial, anti-biotic, antiseptics, hormone replacement, tranquilizer, anti-inflammatory, cardiovascular, anti-convulsant, anti-allergic, antihistamine, gastrointestinal, antidiabetic, antineoplastic, antiviral, fertility, HIV drugs, endocrine disorder drug, metabolic drugs, ophthalmic etc. from more than one pharmaceutical company.

The structure of pharmaceutical industry is very interesting, since the prices of medicines of various pharmaceutical companies are almost similar. There is least


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competition in price as compared to other daily consumer goods trade. Also, due to advancement in research and technology in Pharmaceutical industries, nowadays more product options are available as more generic medicines are in the market which can challenge original products with their lower price. Hence, the focus of the research is on customers who are paying large for common pharmaceutical drugs and their consumer behaviour in regards to pharmacies and similarly priced over-the-counter (OTC) medicines, thus medicines which are not on prescription but are available to all consumers and that are advertised publicly [1, 2].

Consumer behaviour is a very interesting topic for marketing professionals because command on this field can be vital and game changer in terms of choosing precise marketing strategy, and if they get it right, it make business prosperous.

The understanding of the process that an individual or a group go through to satisfy the requirements by selecting and buying as well as using and disposing products is said to be consumer behaviour. This process is not only related to products as it can likewise be ideas and experiences that satisfy the need. If an organization understand the behavior and consumption pattern of the consumers, then they can adapt such strategies that will give them the preferred outcome in terms of consumer response.

The 4P's people, product, place and promotion are the important concept of marketing. The acquaintance of consumer behaviour helps companies to determine their this marketing mix [3, 4]. The exposure of a consumers to and which will affect their behavior, this can be stimuli using the above mentioned 4P's of marketing. The ultimate purpose of an organization is to exist and to satisfy the needs of their consumers. A company could be successful only if they know what is the needs and requirements of their consumers. A knowledge of consumer behaviour helps to explore and understand these needs and requirements.

The way that consumer behave and how they purchase goods and services is influenced by different factors like cultural, social, personal, psychographic and psychological with these many factors, media also contributed a lot for changing consumer trends [5–7].

Culture creates the foundation of the individual's values, opinions and behaviour. These traits create what the consumer wants and therefore do affect the way the consumer acts. Consumers buying behaviour also affected by group of people with whom they surrounded. This social group include family, friends and colleagues as well as on social status & role. The consumers are usually classified or segmented according to their individualities, personality type, age & stage in life cycle, profession & economic statuses, life style as well as self-concept that shape their consumer behaviour. The consumer's pattern of consumption, allocation of money and choice of products is based on the lifestyle also. Lifestyle is unique which is characterized by the consumer's life interests. Lifestyle differences resulted into differentiation of behavior even if consumers share many similar factors like social class, leisure time activities and cultural interests. These contrasts make up the consumer's own unique lifestyle that influences the consumer's consumption pattern. Psychological factors like motivation, perception, learning, beliefs and attitudes also affects consumption behaviour. The process of choosing, organizing and interpreting stimuli, consumers create their own perception about any product, this perception of a person differs to one another, the buying

behaviour does as well. Similarly learning, beliefs and attitude will also influence purchasing of pharmaceutical drugs by an individual or prescribed by practitioners. Psychographic factor which includes values, attitudes & lifestyle survey, is also equally important for marketers so as to understand consumer behaviour.

The aim of the research is to find out about factors influencing the customer's choice of pharmacy as well as OTC medicines. The aim is to understand and explore consumer behavior and to relate it to pharmacy clientele.

The results aid to understand the pharmaceutical market a little better and to gain knowledge on pharmacy customers in the National Capital Region, India.

## 2 Methodology

The research work is based on literature of marketing and consumer behaviour towards the various products. Relevant information is obtained from online publications and websites of the pharmaceutical industry and theories and former discoveries. To know consumption behaviour of pharmaceutical drugs the quantitative research is conducted as a survey in the National Capital Region (NCR), India. The survey has been conducted with a questionnaire form in paper as well as Google form. The questionnaire contains twenty two research questions, out of which four questions are used to collect personal information about the respondent. However, the information, cannot identify the respondent later on. Additionally the survey contains information about the purpose of the study and points out that participation is voluntary. The questionnaire contains closed-ended, multiple-choice questions, as well as questions asking the respondent to rank a few options depending on their importance to the respondent. The questions are designed to be clear so that respondents are able to answer quickly and independently, also elderly people.

**Table 1.** Consumption of various class of medicines

| Class of medicine | Consumption |
|---|---|
| Antipyretics | 41.9% |
| Analgesic | 50% |
| Antibotics | 51.6% |
| Antiseptics | 14.5% |
| Anti-depressant | 19.8% |
| Anti-inflammatory | 19.4% |
| Anti-allergic | 22.6% |

A questionnaire in the research is always a suitable way of collecting relevant information, since it is useful in collecting information from a large amount of individuals. A questionnaire also serves the purpose well since it facilitates to gather information more quickly and about a vast set of questions. In order to best reach customers of all ages the research was conducted online as well as through a paper form.

For the comparative study seven classes of medicines are considered namely Anti-pyretics (used in fever), Analgesics (Pain reliever), Anti-biotic, Antiseptics, Anti-depressant (tranquilizers), Anti-inflammatory and Anti-allergic as shown in Table 1. Also four to five medicines of each class of drugs are considered for study as shown in Table 2.

**Table 2.** List of medicine of all the categories along with percentage of their usage by the respondents.

| Class of medicine | Brand of medicine (Consumption) | | | | | |
|---|---|---|---|---|---|---|
| Antipyretics | Combiflame (47%) | Crocin (12%) | Ibuprofen (11%) | Paracetamol (53%) | Sumo (12%) | Other (3%) |
| Analgesic | Vovran (10%) | Aspirin (18%) | Crocin (44%) | Combiflame (44%) | Saridon (2%) | Other (4%) |
| Anti-botics | Ciplox (40%) | Betrium DS (6%) | Azethromycin (28%) | Roxid (6%) | Amoxcylin (38%) | Other (3%) |
| Antiseptics | Betadin (39%) | Sofrmycin (32%) | Savlon (37%) | Dettol (65%) | Borolin/ BoroPlus (20%) | Other (0%) |
| Anti-depressant | Dixad (13%) | Alpraquil (13%) | Metrozol (42%) | Clobazam (0%) | Stilnox (25%) | Other (25%) |
| Anti-inflammatory | Moov/Volini (76%) | Zandu Baam / TigerBaam (20%) | Iodex (27%) | Vicks (39%) | Other (2%) | |
| Anti-allergic | Avil (35%) | Cetrizin (56%) | Allegra (15%) | Montaire-Fx (8%) | Levocet (6%) | Other (6%) |

Apart from this, four other parameters are considered i.e. sources of information about the medicines, consumption of newly launched drugs of same salts, influence of brand ambassador of particular medicines and whether respondents take drug as prescribed by doctors.

R–programming is used to identify, is there any significant difference on gender, profession, income and age groups over source of information of medicine, influence of brand ambassadors of the drugs, preference of newly launched drugs of same salt, also which class of medicines are preferred and whether respondents take drug as prescribed by doctors. For this analysis chi-square test is applied on various combinations.

Apart from this chi-square test is also applied to explore is there any significant difference on the gender, profession, income and age groups over frequency of consumption of all the seven categories of drugs which are considered for the present study.

Chi-square test is also applied to identify, is there any significant difference on gender, profession, income and age group over different medicines of various classes of drugs consumed by the respondents.

## 3 Result and Discussion

The research has been conducted with 243 respondents practicing different professions. 18% of the respondents are of age group between 15 years to 25 years, Majority of respondent are between ages 25 years to 45 years 38% of the respondents belong to age

group 25 years to 35 years, 27% are of age group 35 years to 45 years. Very few of them only 5% respondents belongs to age group 45 years to 55 years and rest 12% are above 55 years. There are 53% respondents are male and rest 47% are females.

Majority of the respondents around 70% of them belongs to service class, 18% are students, 10% are self-employed only and 2% belongs to business class. 17% of the respondents are either housewives or students who are unemployed. 11% have annual income less than 2.5 lakhs. 33% of respondents has annual income between 2.5 lakhs to 5 lakhs. 23% have 5 lakhs to 10 lakhs and rest of them have annual income more than 10 lakhs. 47% of the respondents take medicines mostly as prescribed by the doctors, 29% take medicines always which are prescribed by the doctors. 24% of them follows doctor's prescription sometimes.

Around 50% of the respondents believe in the consumption of newly launched drug of the same salt sometimes. 20% never try newly launched drugs of same salt. 27% of them often try new drugs of same salt. Only 3% of the respondent always try newly launched drugs of same salt. 68% of the respondents never influenced by brand ambassador of a particular drug. 18% influenced sometimes while 11% influenced often. Only 3% of the respondents influence by the brand ambassadors always.

From the data it is clear that 90% of the respondents consult doctors. Sometimes 35% of the respondents take medicine as prescribed by Chemists. Even 27% of the respondents take medicines as suggested by their relatives or friends. Internet/Print media or Television/Radio are rarely source of information about medicines to the respondents.

Table 1 shows that Antibiotics and Analgesic are commonly consumed by the respondents, almost 50% of the respondents use these medicines. 42% respondent use to take Antipyretics. Around 20% respondent consume Anti-inflammatory, Anti-depressant and Anti-allergic. Only around 15% respondent use Antiseptics. Among antipyretics Paracetamol is most popular followed by Combiflame and Crocin, though Corcin and Combiflame are most popular in analgesic category, Asprin and Vovran are also used in this category but are rarely used. Ciplox, Amoxcylic and Azethromycin are popular anti-biotic others are rarely used. Dettol is the most popular antibiotic, Betadin, Sofromycin and Savlon are also used by people as anti-biotic but Borolin or Boroplus are rarely used in this category.

Metrozol is popularly used as anti-depressant, 25% of the respondents of the category are also stilnox as anti-depressant. 25% of the respondents of is this category also consuming some other medicines. Moov and Volini are most popular Anti-inflammatory followed by Vicks, Indox, Zandu baam or Tiger baam are rarely used for this purpose. The most popular anti allergic is cetrizin, 55% of respondents of this category are consuming it as anti-allergic, some of the respondents also consuming Avail as anti-allergic, and others medicines of this category are rarely used. Table 2 shows the list of medicine of all the categories with are considered for the present study, along with percentage of their usage by the respondent.

From the Table 3, it is clear that most of the respondents take medicines rarely. Still Analgesic are commonly used by respondents, 23% of respondent take Analgesic at least once in a month. 13% of respondents are taking Antipyretics once in a month. 11% of respondents take Anti-inflammatory once in a month. Very few respondents use to take Anti-depressant. Those who take it, most of the time they have to take it on daily basis.

**Table 3.** Consumption pattern of various class of medicines

| Frequency of consumption | Class of medicine | | | | | | |
|---|---|---|---|---|---|---|---|
| | Anti-pyretics | Analgesic | Anti-biotics | Anti-septics | Anti-depressant | Anti-inflammatory | Anti-allergic |
| Daily | 5% | 2% | 0% | 4% | 6% | 2% | 2% |
| Once/twice a week | 5% | 5% | 7% | 2% | 0% | 4% | 5% |
| Once in 15 days | 2% | 12% | 0% | 2% | 2% | 4% | 5% |
| Once in a month | 13% | 23% | 14% | 8% | 2% | 11% | 7% |
| Rarely | 76% | 59% | 80% | 85% | 90% | 80% | 80% |

Chi-square test at 5% level of significance shows that there is no significant difference due to gender and profession, on various parameters included in the present research. However it is found that there is significant difference due to income on consumption of newly launched drugs of same salts. The respondents having income 2.5–5 lakhs they are quite liberal in taking newly launched drugs of same salt. If the found drugs of same salt at cheaper rate they prefer to take them. While respondents of income group less than 2.5 lakhs rarely purchase newly launched drugs of same salts. May be due to lack of knowledge and awareness. Respondents having income greater than 10 lakhs are also not too interested in newly launched drugs of same salt.

Also, it is found from the study that there is significant difference due to age on the consumption of anti-biotic and anti-inflammatories. Anti-biotic are highly consumed by the respondents of age group 15 years to 25 years and age group 45 years to 55 years.

## 4 Conclusion

On analysis we found that antibiotics and analgesic classes of drug are most frequently used by consumers whereas consumption of these drugs are significantly depend on age group. Gender and profession are not effecting the consumption behaviour of the various classes of drugs. It is also found from the study that income of the respondents is affecting consumption of newly launched drugs, may be due to lots of variation in the cost of medicines of same salt. The present study is useful for pharmacy industry and market to explore consumption behaviour of common people.

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