

A Comparative Study of Cost Effectiveness of Ibuprofen Suspensions with Other Similar Medicine in Pharmaceutical Market of Karachi

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Abstract: The use of medicines in our society follows no rules and ethics however there are detail regulations available for this. Both patients and general physicians are responsible for this trend. Patients from middle to lower class are affected by high cost of medicine this is the reason they tend to buy medicine of cheap price and sometime agree to compromise with quality of medicines. On the other hand general physicians are influenced by the unethical pressure of pharmaceutical companies. In this study similar problem is addressed and detailed investigation has been performed. This study revealed the trends in the prescription of medicine addressing pain and fever mostly relevant to children by general physicians. This is a survey based research and analysis which showed that general physicians are influenced by the brand and the manufacturer's name.

A comparison between two medicines namely Ibuprofen and Paracetamol was also discussed which are commonly prescribed by the general physician for the management of pain and fever in children.. Although both are regarded as alternate to each other, as revealed from the survey but an Ibuprofen brand is prescribed more than the other brands. There are many factors associated with this phenomenon such as brand names, manufacturer's name, marketing strategies and cost. The strategies need to gain market share were also discussed. It is concluded from the research that Ibuprofen suspension has an advantage on its competitors prevailing in the market. Ibuprofen suspension has a cost effective advantage and its response is fast as compare to acetaminophen. Moreover dosage time between two dosages of Ibuprofen is greater than acetaminophen. For quick relief doctors prefers to prescribe popular brand of Ibuprofen suspension as compare to acetaminophen.

Keywords: Brand, Cost, Effectiveness, Ibuprofen, Acetaminophen

I. Introduction

Generally people have made habit to go to a quack before going to a doctor for minor ailments. This is more common in rural areas as compared to urban population. There are many reasons behind this. Among them are the high fees of doctors, increasing cost of medicine and diagnostics test made affordable medical treatment very difficult for a common citizen.

General physicians generally prescribe a large list of medicine this is the reason people with low income avoid to go to see the doctor at onset of symptoms. There is another reason that some doctors are deficient in professional approach i.e. they prescribe the medicine considering the seasonal change. They assume that what sorts of diseases are prevailing in the community at the moment so they opt to write what have in their mind rather than to confirm the disease. Such activity some time left a harmful effect on patients.

Fever and pain are very common among the children in our society. General practitioners often prescribed simple analgesic drugs for the relief of pain. Among them are the Paracetamol and Ibuprofen. Both forms are available in the market with different brand names. There are more than 100 brands of each in the market. A few of them are listed in Table A

Table A Different Brands of Ibuprofen & Paracetamol Suspensions available in Pakistan

Brands of Paracetamol Suspension	Brands of Ibuprofen Suspension	S.NO
Aksopol	Actifen	1
Calpol	Aksofen	2
Cetalix	Befen	3
Disprol	Brufen	4
Febrinol	Exifen	5
Febrol	Ibugesic	6
Panadol	Inflam	7
Paracetamol	Jaefen	8

Parapol	Ruberin	9
Tempol	Tabalon	10

The absence of a system to monitor the unnecessary use of pain killers makes the situation worst. Neither the doctor nor the patient take care to consider the possible out come of misuse of pain killer. There is a need to know that how frequently these drugs are used. Both the drug makers and the general physician are focusing on the monetary benefit. There is a trend of poly pharmacy in our country where medicines are prescribed just to oblige pharmaceutical companies to improve their sales. Some medicines which are written in prescription but could be avoided being of secondary importance. There is new trend in the form of cash and gifts given to doctors by pharmaceutical companies which is highly unethical .

In Pakistan, almost every pharmacy sells drugs without a prescription. This situation is not confined to Pakistan only as it is seen in many developing countries. As a result of this practice antibiotics and some potentially harmful medicine are easily available in the market. The lack of awareness among the common people and the lack of good primary health care system in the country put a financial burden to the patients and their well wishers.

Ibuprofens branded suspensions are widely recommended by the doctors, there are more than 100 brands available in the medicine market of Pakistan and some of them are on the top. In this study an attempt was made to determine which one is the leading brand on the basis of responses obtained from the doctors. The research was also aimed to know the important factors which make the brand a leader. For example is there any cost effective factor working behind this or some other reasons?.

Ibuprofen was first reported by Boots Group in 1960. This drug was in use in United Kingdome since 1969 and in USA since 1974. It is available with different brand all over the world. (http://en.wikipedia.org/wiki/List_of_ibuprofen_brand_names)

In children, Ibuprofen and paracetamol are both commonly used as Over The Counter (OTC) medicine for the management of fever or mild to moderate pain. Both drugs are indicated for analgesic and antipyretic in World Health Organization (WHO) Essential drug list. Ibuprofen of pediatric formulation is assumed a short term use in pain management.

There is no difference between the branded and generic medicine as the active ingredient is the same but a drastic difference in sale of the different companies having the same medicine can be observed. The elements which force a doctor to write down a specific brand include

- Manufacturer*s name, whether it is of local manufacturer or a multinational manufacturer.
- It also depends on the money spent by the company on the marketing. Heavy spending of companies to general practitioners is common through out the world. .

There is an acute dire need to know how much Ibuprofen suspension is prescribed in our country and one can find the gap and opportunities to capture more business in this field.

II. Need For This Research

In our society pain killer medicines are frequently used and there is no regulatory system is established to monitor the use of these pain killers. Kids are also not exempted from this practice. There are many reasons behind this. A poor socio economic background of patients is one of the main reasons behind this phenomenon. Majority of people in our country are living in below the line of poverty. Even in the highly populated cities there are many localities where people are lived hand to mouth. Under this condition, when children of this class get sick, parents first try to use their own medication or prefer to go for a doctor where they have to pay less for cure. Any medicine when use in irregular fashion sometime left a harmful effect on the life of patient. General physicians are prescribing the pain killer to patient without care which some time creates a bad and unwanted situation in the hospital or clinics. It can be evident from the news segment of our print and electronic media where patients and medical staff are seem to be in a war like situation. This study was conducted with an aim in mind to identify the factors which push the general physician to prescribe a particular medicine. And also to know those factors which are responsible to make a medicine to lead the market.

A survey based research study was conducted and presented in this research paper. A structured questionnaire was developed covering all the demographics of a cosmopolitan city. The questionnaire was divided into five sections to make the best use of information collected through the survey such as demography, comparison among Ibuprofen, Ibuprofen vs Paracetamol, National vs Multinational companies and Brand. The questionnaire was distributed among the general physicians practicing in different parts of the city covering all income groups. On the basis of the responses obtained from the survey, detailed analysis were performed and presented in the succeeding sections.

III. Structure Of Present Research

This research was conducted with the aim to find which types of analgesics are recommended in children for the management of mild fever and pain. This study consists of primary and secondary research.

Secondary research described the use of analgesics in kids and their safety issues. Ibuprofen and paracetamol are widely recommended for the relief of pain and fever in children. There are a number of research studies available which showed the extent of usage of these medicines. For primary research, a detailed questionnaire was developed in order to know the opinions of the general parishes practicing in the different part of the city. The idea of questionnaire was taken from a study previously conducted. and

A total of thirty two questions were asked in the questionnaire. **Five questions** described the demographic distribution of the doctors. **Thirteen questions** were asked about Ibuprofen in which general physician showed their intention about the use of Ibuprofen. **Four questions** were made to make a comparison between two analgesics i.e. Ibuprofen and Paracetamol. **Five questions** revealed a comparison between multinational and local pharmaceutical companies with respect to these drugs. Finally in the last **five questions**, an attempt was made to describe the factors which are helpful in making a brand successful in the market. Questionnaire was devised after discussion with doctors working as general physician capacity. First it was pretested among the 10 participants who were also general physicians. The questionnaires were distributed among the general physician in five district of the cosmopolitan city. A sixth district was announced after the survey had been conducted. Effort was made to collect the data equally from all the five districts to get concrete information. It took two and a half month to recollect the questionnaires. This period lasts from last quarter of the year 2013.

IV. Presentation Of Data

A total of 135 questionnaires were distributed and 100 responses were received, therefore, response rate was at 74.07%. Among the received data there were 57.0% female doctors and 43.0% male.

Table B gives a picture about the percent of the experience of these participating doctors.

Table B Gender vs Experience

Total %	Female %	Male %	Experience
38	28	10	< 5 years
22	12	10	5-10 years
12	5	7	11-15 years
22	10	12	< 15 years
6	2	4	Missing*
100	57	43	Total

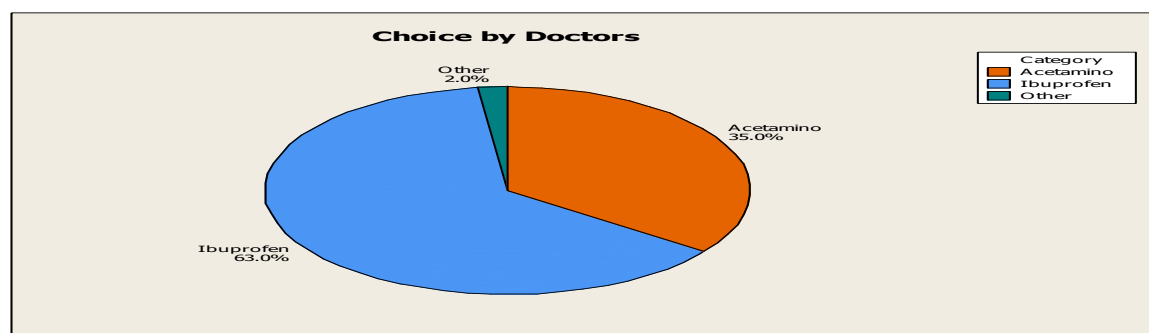
The surveyed doctors graduated from different medical institutions. Majority of them belong to Karachi, some were graduated from other institution of the country and two of them were graduated from abroad.

Table C gives the detail distribution of the doctors in different districts.

Table C District wise position of doctors among Hospitals/Clinics.

Place of work	East %	West %	South %	Central %	Malir %	Total %
Govt.Hospital	10	9	15	18	4	56
Private Clinics	3	2	1	2	5	13
Private Hospital	3	3	6	7	8	27
Semi Private	-	-	1	2	1	4
Total	16	14		29	18	100

Fig. 1 Ibuprofen & Acetaminophen prescription by doctors



Among the doctors surveyed 63 % of the doctors prescribe Ibuprofen to child when visit for the first time while 35 % of the doctors prescribe Acetaminophen and 2% prescribe other medicine other than these two. (Fig.1)89% of the surveyed doctors prescribe Brufen suspension to treat the children with mild fever and pain Only 7% recommend other medicine. 1% recommends Arinac, Dolofen, Inflam and Ruberin along with Brufen.(Fig.2) This indicates that Brufen Suspension has high market share in the medicine market as revealed from this study. There was a mix response about this trend, 18 % of the doctors gave Brand as the main reason.,16 % of the surveyed doctors gave their past experience as the main reason. 15 % considered that effectiveness is the main reason. Cost stand at number 4 with 9 %.

Fig. 2

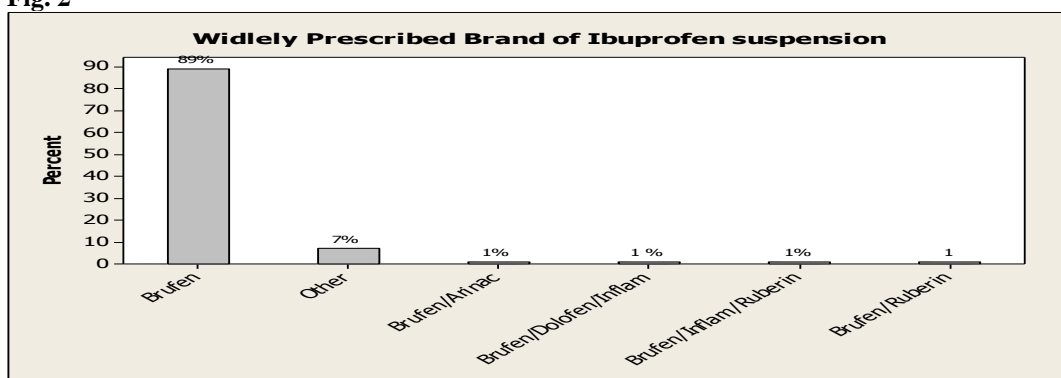
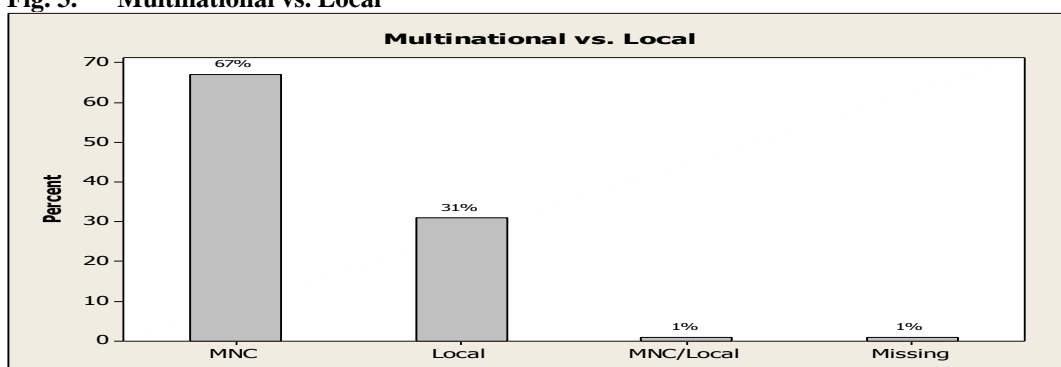
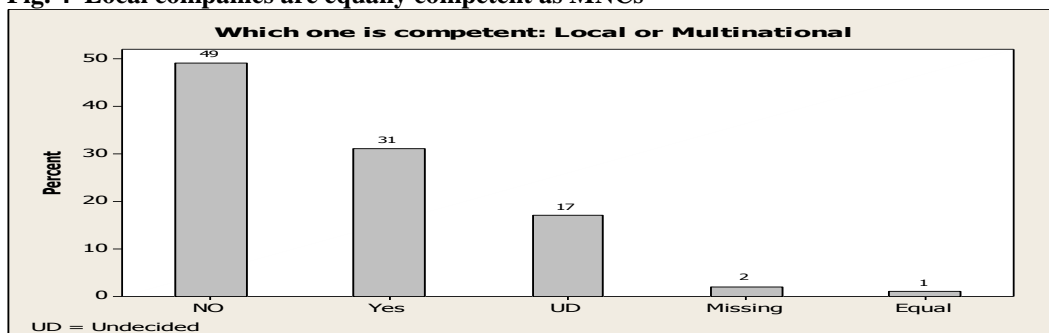


Fig. 3. Multinational vs. Local



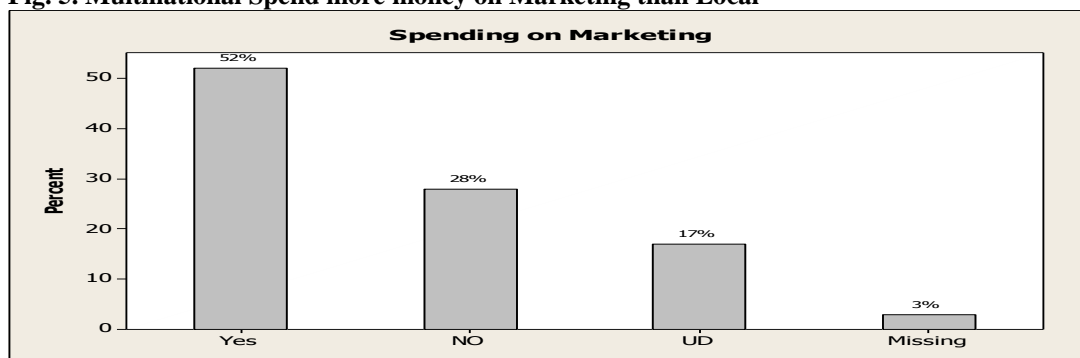
Moreover it was revealed that general physician prefer to prescribe the medicine of multinational companies as shown in the Fig.3. 67% of the doctors prescribe medicine of multinational companies. 31% of the doctors preferred to prescribe medicine of local companies.1% prescribes medicine of both. As far as the effectiveness of both Ibuprofen and paracetamol is concerned 56% of the doctors in survey believe that Ibuprofen is more effective than Acetaminophen 59% of the surveyed doctors agreed that both medicines can be regarded as an alternate to each other.

Fig. 4 Local companies are equally competent as MNCs



49% of the surveyed doctors were of the view that local pharmaceutical companies are not competent as multinational companies. as shown in the Fig.4.

Fig. 5. Multinational Spend more money on Marketing than Local



UD = Undecided

52% of the doctors agreed that multinational companies spend more money on marketing of their medicine. 28% of the doctors denied this assumption.(Fig.5)

62. % of the doctors agreed that medicines of multinational companies are reliable than local pharmaceutical companies. This is the reason why general physician prefer to prescribe the medicine of multinational companies.

V. Discussion

This study was carried out in five districts of Karachi. A self designed structured questionnaire was distributed among 135 doctors across the five districts of city. The primary data was then collected from 100 doctors. Among the doctors surveyed, 43% were male and 57% were female (Table1). No specialist was included in this survey; all the doctors were general practitioners. Their experience was range from <5 years to more than 15 years. All of these doctors were graduated from different medical institutes of Pakistan and now working in different districts of Karachi. The surveyed doctors were working in different capacity in various hospitals and clinics of the city. There were made 4 categories of the working place. Among them were the government hospitals, private hospitals, semi private hospitals and private clinics. Attempt was made to distribute the survey equally in all 5 districts of the city. 16% from Karachi East, 14% from Karachi west, 23% from Karachi south, 29% from Karachi central and 18% from the Malir.

Doctors believed that Ibuprofen has a cost perception to the patients. Most of the doctors 59% agreed and 7% strongly agreed that it has a cost effective perception. But it is not proved in the response to later question where cost is not the main reason for prescribing the Ibuprofen suspension..

Ibuprofen suspension can be given alone to the children having mild temperature but about 49% of the surveyed doctors give antibiotic with Ibuprofen. It may be due to the experience of the doctors who are aware of the prevailing diseases in the community in which use of antibiotic inevitable. Ibuprofen and Paracetamol suspensions are available in more than 100 brands in Pakistan. It can be searched through Google at and .Some of them are manufactured by multinational companies and some are manufactured by local pharmaceutical companies. The results showed that 89% of the doctors preferred Brufen suspension.(Fig.2). Its means that majority of the surveyed doctors believe that Brufen suspension has some thing in it that*s why it is prescribe more than the other brand. It is not the cost of the suspension which makes it a leader but some other factor for example brand name of the medicine, experience of doctors, effectiveness and cost.

These results revealed the importance of brand in the market. A strong brand is not only the need of consumer market but also important for medicine market. This is the reason why many companies strive hard to build and maintain the brand. These companies spend much of their revenue to create and then sustain the brand.

To maintain the brand name companies are going to explore innovative ways to beat their competitors. This competition on one hand has a beneficial impact but on the other hand also cause the cost of healthcare to increase. The companies should be prepared for tools to be needed in future. These may include advance technology, pricing level and improvement in production facility, potential to meet the competitors.

The medicines are manufactured by either local or multinational companies. In Pakistan national companies are on progress. Their number is increasing with the passage of time. In response to a question where doctors were asked whether they prescribe the medicines of national pharmaceutical or multinational pharmaceutical companies, 67% of the doctors preferred to prescribe the medicine of multinational companies (Fig.3) while 31% of the doctors preferred to prescribe the medicine of national companies. The doctors who gave answer in the favor of multinational companies have some parameters in their mind on basis of which they prefer the medicine of **multinational companies**. These factors include, **Brand name, Effectiveness, Quality, Reliability, Marketing** and **less side effects**.

Acetaminophen (paracetamol) is also used to reduce the temperature in children. Although it is not the same group as Ibuprofen but it is also prescribed for the management of fever and pain in children. In response to a question 56% of the surveyed doctors were of the view that Ibuprofen is more effective than Acetaminophen (43%) Some researchers believed that Ibuprofen is more effective than acetaminophen. . It also differs from the paracetamol in term of frequency of use as it is repeated after 6-8 hours while the paracetamol is recommended after 4 hours

As far as the safety of the drug is concerned, 59% of the doctors believed that acetaminophen is safe than Ibuprofen .But literature has shown that in terms of safety there is no difference between these two medicines.

Majority of the doctors (49%) were of the view that local pharmaceutical companies are not as competent as multinational companies but the scenario is changing now, national pharmaceutical companies are growing fast. In response to a question where doctors were asked whether medicine of multinational companies are reliable than local companies, 62 % doctors agreed with that statement. This seems to be strong marketing strategies adopted by multinational companies which inject a sense of reliability and strong loyalty among their customer. The national companies can invest in this sector and they can take benefits of this in future. 52% of the surveyed doctors agreed that multinational companies spend more money on marketing as compared to local companies.(Fig.5) This reflects the importance of brand in the market. Although national companies are performing well but still has to need to do more on this ground.

General physicians give their past experience more value during prescription as it is evident from the survey in which 71% of the doctors give importance to their past experience. 54% consider the brand name and 53% consider the price of the medicine. 22% of the doctors were of the view that advertisement has also its role in prescription, 26% of the doctors believe in the promotion strategies of the companies

The incentive offered by the pharmaceutical companies to the doctors for the promotion of their medicine is not new. This activity initiated with the start of medical schools..The medicine companies offered luxuries trip to the doctor to attend some sort of conferences and which resulted in the increase of their medicine in the areas where those doctors were practiced.

Pharmaceutical companies have established strong relationship with the general physicians to promote their medicine .Sometime this relationship crosses the ethical barriers and both parties work together for the well being of each other rather than for the welfare of patients . Pakistani society can not be exempted from this world wide behavior. The gifts, incentives, promotions and household necessities are provided to doctors for the promotion of the medicines. Some association of pharma companies and of doctors are established which some how are involved in the wrong practices.

There are many factors which make a brand successful in the market. According to the surveyed doctors, 78% believed that quality of a medicine comes first to make a brand powerful in the market . Its means that other factor are important but if it does not meet the quality than other factor will not meet the purpose for long period of time. 65% of the doctors gave importance to the flavor of the medicine and is true with the children because it is very important that its flavor must be acceptable for the children. The medicine should be effective other wise it would not serve the purpose. Appearance is also given importance by the doctors. Cost is also an important factor to make a brand successful in the market.

48% of the doctors were of the view that the name of multinational company is itself a reason to make a brand successful. This would be a debatable argument and a lot more can be done in this sector. Only 24% of the doctors believe the importance of incentives to make brand. It is clear that incentive, promotions and advertisement do little to build a brand but these factors are playing their role to maintain the brand. This is the reason why companies of good reputation spend much of their spending to create the brand. From doctor*s point of view sponsorship is also helpful to create the brand. 45% of the surveyed doctors agreed that sponsorship is playing its role to build the brand. 21% did not believe in the statement. Sponsorship can be used in both ethical and unethical manners

VI. Conclusion

The purpose of the study was to know that a specific Ibuprofen suspension brand has an edge over its competitor prevailing in the market and what are the reasons behind its success. Ibuprofen suspension has a cost effective advantage and its response is fast as compare to acetaminophen., suggested that Ibuprofen has faster and more prolonged relief over paracetamol in the first four hour. Moreover dosage time between two dosages is greater than acetaminophen. Ibuprofen suspension is available in market with different brands names. It is regarded as more suitable for children with mild temperature and pain. According to survey Brufen suspension has come out as the leading brand in Karachi. There are many factors which make it a leading brand. The main reason is its brand name. Its success is nothing to do with the cost. Majority of the doctors recommend Brufen because it is a brand leader. Some doctors recommend Brufen due to their past experience. Other factors which compel the general physician to prescribe the Brufen suspension are effectiveness, cost and manufacturer*s

name. Through this study it was observed that doctors prescribe medicine of multinational companies as they feel that these companies are competent than local companies and their medicine are reliable than national pharmaceutical.

The brands of multinational companies get popular because of heavy investment by these companies. These companies work on different approaches to build a strong brand. They keep them involve in social community and make the people realize that they are the true companion of them so people get involve in personally and pay heed them very carefully. Perhaps this approach is still the national companies is lacking.

Multinational companies spend money to arrange seminars, conferences and workshops to make the people aware of the latest development in the medical field. These conferences and workshop are also held for the doctors where the doctors not only able to make contact with highly expert professional but also get to know the latest improvement in medical treatment. This is a very important positive outcome of the spending of the companies. The multinational companies are more corporate social responsible than local companies. Paracetamol is also used in the management of mild fever in children. These two medicine although belongs to different groups but regarded as alternate to each other by the surveyed doctors. The use of generic drug can reduce the expense of the patients as these medicines can be available at low cost.

VII. Recommendations

The scope of this study was very limited as it was confined to only one city. The sample size was very small as compared to the population of the metropolitan. There is much room available to further expand the research. The main hindrance in the research was the limitation of the resources and time. The unavailability of relevant data was also a reason to improvise the research. There is need to expand this study to national level including not only the major cities but also remote areas of the country which will enable the researchers to set for a quite healthy statement for a leading brand of Ibuprofen suspension.

Study can be designed to establish the factors responsible to make a brand successful in the market. The conditions in the remote areas of Pakistan are not encouraging. People because of poor socio economic conditions tend to buy cheap medicine and due to lack of education, quality consciousness is not developed. The local, unfamiliar brands are popular because they are available at low price. The other reason is that most of the companies including national and multinational do not get rooted in the remote areas because of one reason or the others. There is also need to develop a data to know the daily consumption of analgesic drugs in the society so their impact on the life and health of patients can be determined. The excess use of these medicines like Ibuprofen and paracetamol may lead to undesirable consequences, a controlled system to be established to monitor this situation.

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