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## Factors Influencing Prescription Behavior of Physicians

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### ABSTRACT

The Competition is increasing day by day in Business arena and one who reacted timely against these frequent changes can survive in the competition, same in the field of pharmaceutical marketing, every day different companies bringing different brands with continuously increasing the size of market. In this competition medical practitioner and physicians are the key customers for this industry. Physicians are actually the ultimate decision holder of which brand should be prescribed to their patients. Therefore, all the marketing strategies are being focused towards them. Marketing strategies are revolving around product, price and promotions and Companies are making marketing tools to draw the attention of physicians for prescribing the brands. In this study, the researcher examines the factors, which are influencing the prescription behavior of physicians. In this regard, Regression analysis has been used to conclude the results of the undertaken study. The research is based on panel data. There are certain factors, which influence the prescription behavior of physicians such as New Drug in market, Brand Prescription, Sponsorship to Conferences, promotional tools and drug samples. Influence is heavily depends on how the sales person promote their brands. The main conclusion of this study is that there are two factors which impact a lot than any other factor i.e. one is New Drug in market and the promotional tools.

**Keywords:** New Drug, Brand Prescription, Sponsorship to Conferences, promotional tools, drug samples and Physician prescription behavior.

### 1. Introduction

Similar to other industries, the main objective of pharmaceutical marketing is to increase the profitability of the organization by accommodating the needs and wants of consumers. In different commercial industries other than pharm it is much easier for the customer to make the choice to which brand and item ought to be obtained consistent with their necessities and prerequisites. Whereas in the pharmaceutical marketing customers and the people who consumes falls in two distinctive classes <sup>[1-2]</sup>.

Although people buy products for the curing of the disease they suffering from it depends on the condition, but which brand should customer buy is the ultimate choice of physician. The aim of marketing strategies with respect to customers i.e. prescribing physicians, retail chemists & purchasing consumer i.e. patients the sales promotion employees which belongs to internal customers of the company they are also considered before they launch the marketing strategy and at the time of designing of marketing strategy unlike other industries pharmaceutical products are more specific products while sales promotion rely on scientific knowledge sharing within limited norms and that too the people (doctors) who have got the enough information that those, who are promoting (MR's).

With all these concentration the physician prescription behavior is the real thought for all the pharmaceutical organizations. Organizations advertising methodologies are outlined and executed on the premise of the physician prescription behavior towards the drug. To make the physician prescription behavior towards the organization brand the pharmaceutical associations utilize the immediate showcasing method through their sales force. The special methods are transmitted specifically to the physicians through their sales force, the product information that are identified with the experimental research and upgrades and the benefits of prescribing. Dissimilar to different commercial enterprises the pharmaceutical products are compact and particular and touchier in nature. Which incorporates the experimental information, which requires the sales promotion with limited standards and passing technique for the product information with those persons i.e. specialists who have better point by point information towards the diseases and instrument of the form (WHO Technical Report Series, No. 722, 1985, p. 43)? To make comprehending with doctor's level of information the sales force nature of

learning should be up to the standard and its side reactions are obliged which can take a stab at the level of doctor learning <sup>[1-3]</sup>.

The value of sales force are measured by the amount of information conveying on their sales calls where they have restricted time to pass on more detail of the product to the doctors. The quality sales call outlining can leave better information about the products offers and more important the adverse impacts information in given constrained time by the doctors. There are the numerous components, which influence the physician prescription behavior. The prescription behavior of the physicians fundamentally dependent on the new drug prescription, branded (generic) drugs, sponsorships to conferences, promotional tools and free drug samples and so on, to get the prescription response from the physicians above techniques qualify the sales force strengths by outlining. The topic is based on these six key words,

- Physician Prescription Behavior (PPB)
- New Drug (ND)
- Brand Prescriptions (BP)
- Sponsorship to Conferences (SC)
- Promotional Tools (PT)
- Drug Samples (DS)

### 1.1 Background of the study

There are so many aspects which impact the doctor's prescribed behavior recent study was conducted in Marathwada region India 2011 with selected aspects, which impact the doctor's prescribed behavior while recommending the drugs. Similar like other sectors, drug promotion choices are taken to increase productivity of the company, by fulfilling the needs & wants of the clients. It is quite simple in non-pharmaceutical sectors as the client (consumer) can make up their mind to what item & in what requirements it should be bought. In drug promotion, the client & the customers are two different individuals. Even though the products are being bought by the patients for treating the infected situation, the choice of what item that individual should the physician takes purchase. Therefore the marketing policies are designed by keeping in view the consent of customers' i.e. prescribing physicians, retail chemists & purchaser (customer) i.e. patients. Not only these three but even the factors influencing prescription behavior of physicians: A study with internal customers of the company that is the sales promotion employees of the company are taken into consideration before or along with formulation of marketing strategies <sup>[3]</sup>. The factor discussed in the questionnaire is Price of the product availability of the product, communication made by MR the product quality, which is being promoted. Name of the company for which brand belongs to which company, new research molecule and new research combination drug. Free of cost samples of the drugs, free medical camps, product folders, Continuous Medical Education (CME's) Gifts & other promotional inputs, Research Molecule, Incentives, Sponsorships to conferences <sup>[4]</sup>.

The Physicians are usually concern about the quality of general medication, and possible obligations linked with their use, therefore; we analyze the behavior of Pakistani physicians towards general medication prescribing. This research not only analyzes practice of physicians to prescribe general medication but also evaluate it with general specialist in Karachi. The

results reveals that in both areas of expertise (physicians) want to prescribe general medication because of more educational outlining as sales rep of general companies frequented them many times in month to emphasize / upgrade them on general medication. In this research we focus five areas that impact doctor's pre- scribing behavior of general medication. Our research indicates that only in one area having resemblances between both that is "Under which condition do you want to prescribe general medication to the originals <sup>[5, 6]</sup>.

### 1.2 Previous Research

The influence of promotional tools by pharmaceutical industry on prescribing behaviors of doctors has a greater impact. The general promotional tools like gifts and etc. These are more influential rather than scientific promotional tools for the physicians contrast with consultants <sup>[6]</sup>.

<sup>[7]</sup> Analyzed the effect of drug sample availability on physician prescribing behavior. Based on their review, they investigate that most accepted view that the medicines free samples are beneficial to the patients and indirectly the good caring response come from the doctors from the free samples that's why it should be reconsidered. <sup>[8]</sup> Examined the prescription behavior among Medicare beneficiaries with capped prescription benefits. They find that the prescription behavior has significant impact on the Medicare choices members.

The ethical activities from the medicine companies to the medical professionals through communications by medical sales representatives. Small gifts such as pens, notepads, pens, dinners sponsored by pharmaceutical companies, sponsorship to the conferences and many other activities under taken by physicians. Many doctors do not take into account accept small gifts as unethical and inputs such Rx affect its structure. A doctor agrees that such activities by the pharmaceutical companies are the indirect requirement of their drug prescriptions <sup>[9, 10]</sup>.

The personalized pharmaceutical marketing along with the facility of gifts and sponsorship to education recreational activities. This research work conducted to find the donations and sponsorships offered by the pharmaceuticals and reviews of doctors on it, that it is ethical or unethical. Physicians are more towards the concern of ethical values and issues contrary to residents. Physicians more eager and concern on the gifts and different things provided from the pharmaceutical organizations for donations and sponsorships at the start of their careers <sup>[11, 12, 20]</sup>.

The factors influencing prescription behavior of physicians, discussed in the questionnaire are Price of the product, Availability of the product, Communication made by MR the product quality that is being promoted. Name of the company for which brand belongs to which company, new research molecule and new research combination drug. Free of cost samples of the drugs, free medical camps, product folders, Continuous Medical Education (CME's), Gifts & other promotional inputs, Research Molecule, Incentives, Sponsorships to conferences. The conclusion shows that marketing strategies related to 4Ps influence the physician prescription behavior in this study <sup>[12]</sup>.

The mindset and the factors, which influences the prescribing behavior of physicians and their practice in Greece and Cyprus, and may be used for creating policies and enhance their choices. The highlight of the study is that drug clinical effectiveness is necessary element in prescribing medicine. Another research was conducted in Denmark, which derived

that price is also an important factor in prescribing drug and on top of that Pharmaceutical industry, sales representative affects physician's behavior<sup>[13]</sup>.

Pharmaceutical organizations often use drug samples as a technique in the ambulatory proper care establishing. Little is known about how the accessibility to drug samples affects physicians' prescribing methods. In this research of self-reported doctor actions, avoiding cost to the individual was the most reliable motivator for physicians to use drug samples, although physicians recognized other advantages of drug samples that varied with the medical conditions. The recognized advantages of drug samples often led physicians to review that they would distribute or recommend medicine that differed from their preferred medication choice<sup>[14, 18]</sup>.

The financial rewards that had been suggested described or used regardless of their preliminary purpose and, when possible, to evaluate the outcomes of these rewards on expenses, procedure or outcomes of care Systematic review of the fictional works<sup>[15, 21]</sup>. The effect of drug samples for the prescribing habits of family practice citizens and staff for the therapy of hypertension. This research highlights the need for a multi-facility research to figure out the impact of drug samples on prescribing practices<sup>[16, 17, 19]</sup>.

Whether and how costs and marketing activities influence prescription choice behavior using an extensive board of doctors and data on competitive cost and marketing activities. The writers find that physicians are recognized by fairly limited cost understanding outlining and examples have a mostly useful effect on physicians and physicians with a relatively large amount of Medical health insurance or health maintenance organization patients are less affected by promotion than other physicians<sup>[22, 23, 24]</sup>.

## 2. Material and Methods

### 2.1 Data, Sample and Methodology

The total population and targeted population defined as below and on the basis of target population analyst has chosen sample size which has also been extended as below, further, following research methodology had adopted in order to conduct this research study.

### 2.2 Targeted Population

The total population of undertaken study is the following: All the doctor's society either they are General practitioner in urban area or Medical Officers & Resident Medical Officers of Government & Private hospitals or the Consultants of all specialties either they are working in Government or Private Hospitals. Sample data of different areas of Karachi city like Korangi, Landhi, Malir, P.E.C.H.S, Nazimabad, Old Karachi, Defence, Clifton, Gulshan, Gulistan e Johar have been collected. General practitioner urban areas, Medical Officers & Resident Medical Officers of Government & Private hospitals or the Consultants of all specialties either they are working in Government or Private Hospitals have been picked up for this study. According to IMS Karachi city is hosting more than 35% of total pharmaceutical market of Pakistan<sup>[25]</sup>.

### 2.3 Sample Size

Cluster sampling has been selected because this study refers to quantitative analysis<sup>[26]</sup>. Another cause to choose this kind of sampling technique is due to the whole population is very much scattered and spread in a larger geographical area of the Karachi city, further, the whole population is heterogeneous

<sup>[27]</sup>. In order to get the samples different clusters will be collected from different areas of Karachi city. Researcher has used following six variables in order to experience the above study and to find statistical analysis & conclusions. The total sample of 260 has been collected from following six different variables.

### 2.4 Data collection Instruments:

The data was collected through questionnaire from the target population (doctors) and the questionnaire contains five Likert scales ranging from as below.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

### 2.5 Statistical Tool & Technique:

Regression technique and factor analysis were chosen to find out the results of the above objective of research.

### 2.6 Regression Techniques:

To find out the relationship between dependent and independent variables there is a tool called regression technique that is used. In this research we highlight the physician prescription response/behavior on different factors in Pakistan region. Statistical Package for the Social Sciences (SPSS) software is a scientific tool that is used to identify the significance between the dependent and independent variables.

### 2.7 Model Equation:

$$PPB = \alpha + \beta_1 ND + \beta_2 BP + \beta_3 SC + \beta_4 PT + \beta_5 DS + e$$

Whereas PPB defining the physician prescription behavior ND is for new drug which contain new research molecules and new drug presented first time in Pakistan, BP is for brand prescription defining the research molecules (branded drugs), SC highlighting the sponsorships to conferences diverse global conferences is arranged by the distinctive institutions for the most recent updates in diverse countries over the globe, PT is for promotional tool i.e. gifts, clinic renovations, free medicinal camps, patient awareness programs, round table exchanges, symposium, seminars, and so forth DS showing the drug samples gave by the medical representatives of the pharmaceutical organizations free for advertising the medications throughout their sales calls to doctors and e is highlighting the error term<sup>[28]</sup>.

### 2.8 Model Hypothesis:

**Ho1:** New drug is significant to physician prescription behavior.

**Ho2:** Branded prescription is significant to physician prescription behavior.

**Ho3:** Sponsorship to conference is significant to physician prescription behavior.

**Ho4:** Promotional tool is significant to physician prescription behavior.

**Ho5:** Drug sample is significant to physician prescription behavior.

### 3. Results and Discussion

**Table 1: Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.294 <sup>a</sup>	.086	.068	.55059

a. Predictors: (Constant), DS, BP, CS, ND, PT

b. Dependent Variable: PPB

From the above table we conclude that R showing that relationship do exist in the Chosen variables whereas R square representing the amount of change occurs in dependent

variable due to independent variables and finally the Adjusted R square .068 which representing the strength of the relationship.

**Table 2: ANOVA<sup>b</sup>**

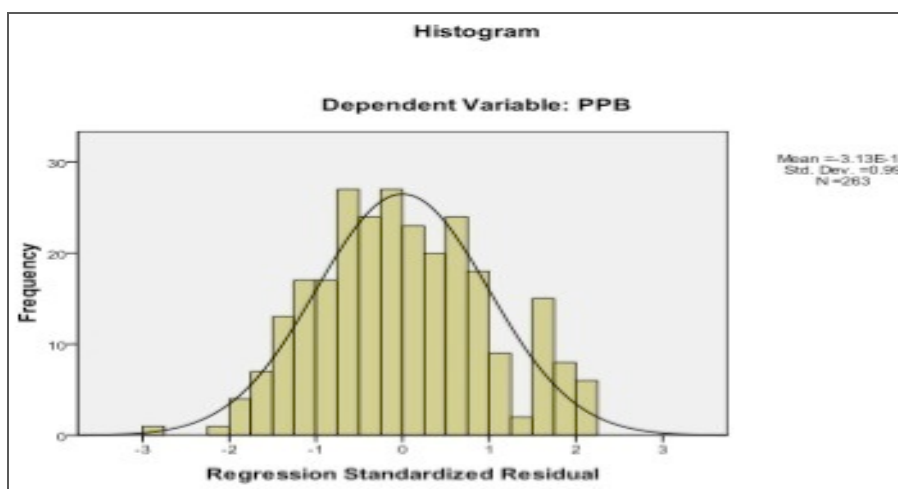
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	7.350	5	1.470	4.849	.000 <sup>a</sup>
	Residual	77.909	257	.303		
	Total	85.259	262			

The above table predicts that the model is statistically significant because the sig value is less than 0.05.

**Table 3: Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.605	.483		3.326	.001		
	<i>New Drug</i>	.158	.068	.155	2.334	<b>.020</b>	.808	1.237
	Brand Prescription	.031	.071	.029	.446	.656	.859	1.165
	Conference Sponsorship	.045	.066	.045	.690	.491	.853	1.172
	<i>Promotion Tools</i>	.188	.071	.186	2.647	<b>.009</b>	.717	1.395
	<i>Drug Sample</i>	.137	.070	.127	1.945	<b>.053</b>	.831	1.203

The value of t stats in Table 3 shows the significance dissimilar to its variable or regarding its variables in the model. Significance of every variable is presented by the value P in the table specified above.



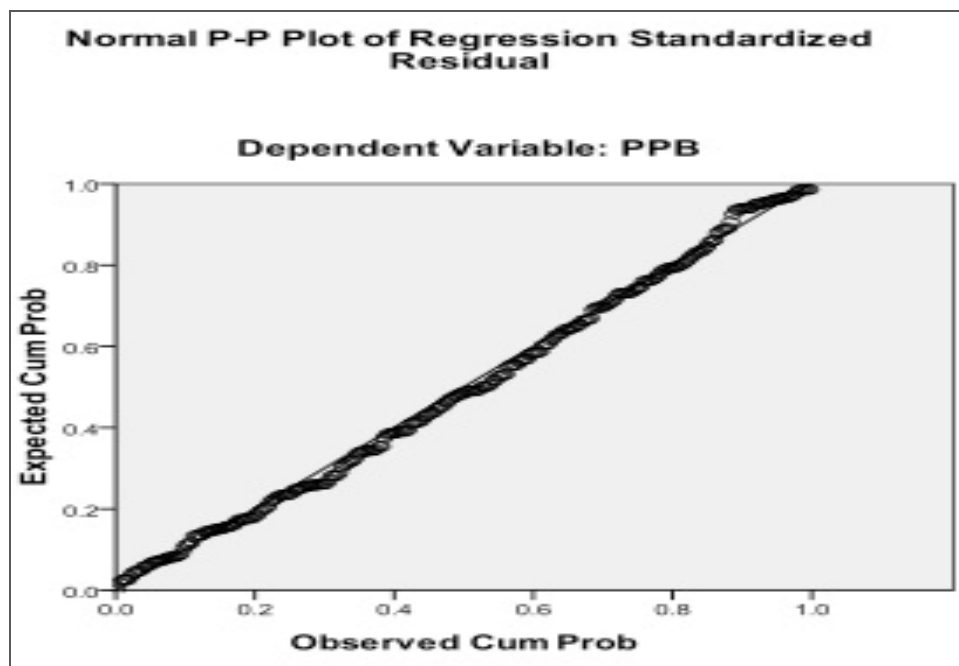
**Fig 1: Histogram: Significance of Prescription Behavior**

Figure of New drug variable, Promotional tools and Drug samples are under 0.05, which means that every variable has a

significant impact on physician prescription behavior. Whereas the variable figures of Brand prescription,

Conference sponsorship are more than 0.05, which shows that, these variables have an immaterial impact on physician prescription behavior. VIF values indicate the coefficient of

multicollinearity which means variables are identified with or having an association with one another.



**Fig 2:** Normal P-P Plot of Regression Analysis

When two variables are joined, then the two variables show same experience and both show the same data. A few co-linearity be highlighted when the value of VIF is more than 10. In the table 3 as specified above the VIF values are less than 10 that show the reaction that on the change of the value of one variable does not influence the value of other variable.

#### 4. Conclusion

This research is based on when physicians recommend any medicine the new drug (ND), promotional tools (PT / relationship planning) and drug sample (DS / quick sale technique) influence physician prescription decision. In order to get the results, conduct a research instrument simple and understandable (Questionnaire Likert scale) and get filled by the target population (physicians) in distinctive clinics, hospitals and centers of doctors spotted in Karachi. There are certain variables which have been used to conduct the research names are brand prescription, promotional tools, sponsorship to conferences, new drug and drug samples, these are the independent variables, and physician prescription behavior was taken as a dependent variable and took sample size of 263. Regression analysis were used to find out the impact of factors used in this study and conclusion suggests that the new drug, promotional tools and drug samples significantly affect the prescription behavior of physicians and remaining factors do not leave any major effect. Branded products are always expensive than local products therefore the brand prescription is less affective on prescription behavior of physician because of the cost factor.

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