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PCA (Principal Component Analysis) Approach towards Identifying the Factors Determining the Medication Behavior of Indian Patients: An Empirical Study

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Abstract

In order to achieve a healthy society, health care has received a greater importance these days. There are various factors such as gender, age, illness type, access to service, service quality that influences the health seeking attitude of people. For the treatment of patients an awareness of health seeking attitude is of prime importance. Health seeking attitude in respect to illness behavior defines such activities that are addressed by patients with regards to care services that are making community health programs a success or failure. There are various contexts in which we can see the factors that are determining the health behavior of patients. Factors such as social, physical, cultural, economic,

and political. Thus, utilizing the system of health care it may be private or public, formal as well as informal, it might depend upon the demographic factors, educational level, social structure, gender discrimination, environmental condition, etc. This paper is about the association of factors that influence the health seeking behavior of the patient. A sample of 141 respondents was surveyed to know the factors that determine the Medication Behavior of patients. After analyzing the data through factor analysis the study concludes that different factors that determine the medication behavior of the Indian patient are Personal Factor, Social factor, Cultural Factor and Psychological factors.

Keywords: *Consumer behavior, self-medication, medication, pharmacy, health care services, medication avoidance*

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Introduction

Behavior of the patient is the area of patients, hospitals and the practices that are carried in the hospital to secure and dispose the services as well as the products in order to fulfill the requirements of patients. There are various factors that influence the medication buying behavior of patients like Cultural factors, social factors, personal factors, and psychological factors, these factors are discussed below:

- A. Cultural factors – cultural factors are those factors like culture of patient, subculture, class that influences the medication behavior of the patient. Culture of patient is important to consider as it is the reason behind the needs, wants, and behavior of patient.
 - The effect of the culture of patient influences the buying behavior and it can differ from region to region, state to state as well as country to country.
 - Every culture has various subcultures such as nationality, religions, geographic regions, racial groups, etc.
 - Social class is important for the hospitals that are multispecialty and is created by each society. Income of patient sometimes determines the medication behavior of medication and choice of hospital.
- B. Social factors –It is studied that the behavior of patients is also influenced by social factors. Reference group, families, role, as well as the status of patient are some of the major social factors influencing their medication behavior.
- C. Personal factors – Personal factors that influence the medication behavior of patient such as gender, age, occupation, self-concept, economic condition, personality, etc.
- D. Psychological factors –Psychological factors that impact the medication behavior of patients are: motivation, beliefs, perception, learning, as well as attitude.

In a study it is also found that the costs either direct or indirect, social backwardness also effect and work as an obstacle for the patient from seeking treatment for their disease and that determines the seriousness level of their disease and also about seeking treatment. However, more loss of a man everyday discourages seeking of treatment, travel time enforces criticality in seeking treatment as patient do not like

repeated visits to their doctor and hospital. It is noticed that patients who are having good social economic background and have insurance backup with them visit their hospitals regularly and most prefer private hospitals and poor patients prefer public and government hospitals as their budget is low. Medication seeking behavior is not different for slum and non-slum patients. Patients find that medication and treatment if their illness is cost-effective and treated well in public hospitals, while it could not reduce the indirect cost and access hindrances. Patients prefer medication that is cost-efficient and services that are output based from their health care facilities provider, and there is also scope for the government to bring improvement in the system of public health to provide an effective alternate to the private counterparts to give benefit the huge number of poor patients who are living mostly in urban slum areas(Patra &Bandyopadhyay, 2020).

According to the research, factors such as exposure of mass media to the mother, mother's literacy status, holding cards of living poverty line, families who are living in joint family are found to be considerably related to the healthcare seeking attitude of mothers. Connection between the healthcare seeking behavior of a mother and the gender of the child is also found to be considerably substantial. The opinion of majority of mothers for not seeking healing medication services is due to various reasons, some of them are lack of awareness, ignorance, cultural belief, more concerned about the male child, work load of the family, etc.(Ghosh et al. (2013).

Literature Review

Gupta et al. (2020)found misconceptions and lack of awareness among the patients of hypertension and there is a need for them to seek expert care. Patients of hypertension often search for alternate source of healthcare services because of their incompetence to undertake medication because of their poor financial condition. Thus, there is a need to promote public health education in order to bring awareness and provide good quality healthcare service along with easy accessibility of medication to the patients of hypertension.

Dawood et al. (2017)stated that there are patients who for their illness first of all consult a physician, whereas patients who poor financial condition consul a pharmacists as their first choice for their health issues. It is suggested that for any kind of illness, a patient must consult a physician first, however, it is the choice and right of a patient to seek treatment from whoever they want. However, the major elements that decides the first action of a patient about where they will seek medication is their age, occupation, ethnicity, and the income level. There is a need to organize educational intervention program in order to educate patients to make proper usage on medicines that are purchased without doctor's prescription to treat their minor illness

Kanbarkar and Chandrika (2017) explained about one of the aspect of help seeking behavior, which is healthcare seeking behavior. There is difference in the willingness among people to seek help from their healthcare provider. Some of the patients visit regularly to their healthcare provide to seek help for their medication whereas others visit only when they are in much pain and their illness become serious. The healthcare seeking behavior of a patient has been defined as a process of remedial action that a patient go

through while treating their disease. Particularly, a health seeking can be explained with the data that has been collected from the information like the difference of time between the beginning of a disease and the time of getting in contact with the provider of healthcare services, the kind of health care provider that a patient seeks help and the complaints a patient is having with the suggested medication, reasons behind choosing and not choosing a particular healthcare expert.

Ngangbam and Roy (2019) found about the patients in the northeast India, it is found that patients who are highly educated, have communicable illness, have good economic background are more probable to consult a formal healthcare service provide and take proper medication. Patients are also tend to substitute with other kind of healthcare alternate available in the market the time when the costs of some particular medical provider increases or inversely. In a study it is found that because of the low quality of the medical services that are provided in public hospitals is the reason why patients do not choose public hospitals.

Dominic, Shashidhara, and Nayak (2013) explained about the study where it is found that most of the adults in rural areas are opting for the medication services of private hospitals for their diseases as they face various problems while using services of public hospitals such as poor and insensitive staff, shortage of medicines and services, inaccessibility of the services, etc. The medication seeking behavior of patients depends upon their perception about the service quality that is being provided by the healthcare service provider.

Oberoi et al. (2016) found that the pattern of medication seeking behavior of a patient collectively works with the client based factors, social and demographic factors, perception of the patient and caretaker both, social networks, etc. Development of any kind of health policy depends upon the type of feedback received by the patients and the outcome of the policy depends upon its timely and effective implementation. Such health policies must be effectively promoted and advertised through different media like TV, newspaper, radio, and social media for the educated as well as uneducated people.

Mohanraj and Amutha (2015) conducted study to study about the inclination of patients towards homeopathy medication and the factors that influence patients towards homeopathy drugs as well as their knowledge about homeopathy medication. The study found that majority of patients are very much satisfied with homeopathy medication and purchasing its medicines. According to the survey, respondents found these medicines available everywhere and found its quality good to consume and effective for their illness. More awareness needs to be created among people about homeopathy medication and for that researchers suggests promotional campaigns.

Shekhar, Jose, and Rehin (2019) explained that, the medicines have the power to cure illness and strong diseases, however at the same time, if these medicines are misused by patients, it can cause them lifelong sufferings. A patient must be aware about the side-effects of the medicines that they are consuming if they are using it without the consultation of their doctor or any other healthcare service provider. There are people who consult their doctor before taking any kind of medicine even for a small illness, and there are people who do not consult doctors and take medicine with their own knowledge and without

knowing about its side-effects and keep doing self-medication. Some of the factors of self-medication are easy access, money, convenience, brand loyalty, etc.

Kamath and Lakhangaonkar (2015) stated that big mistakes that are made by Indian patients are they take medicines from chemist without providing valid prescription and that is the reason why they face shocking side-effects of such medication. In comparison to other developed nations, India do not have any strict legal laws for the pharmacists to sell medicines, and implementing such laws is even lesser in India. In India, even consumers are less or not aware about such laws. Majority of patients do not visit doctor for their illness and take medicines with their or with the knowledge of the pharmacists and make their illness critical. Most of them rely upon the advice of chemists, do self-medication, or refer old prescription.

Mohiuddin (2019) described the behavior of patients towards medication as a disruptive behavior as patients have a manipulated mental stage having a fear of being ill, worried about the cost of medication, changes in the lifestyle if they suffer from some serious and dangerous disease. Chemists and physicians generally do not ask patient about their concerns towards medication, understandings, and behavior. The concerns of such patients can make harmful impact on the behavior of patient, many patients are unwilling and hesitate to ask or complaint their doctor about their medication.

Alomi et al. (2018) studied that in order to get healed from an illness, the management of illness has to complete full cycle of its healthcare plan. The most important plan of this plan is going through a medication. One of the influential factor in the attitude of patient towards their medication process is their background. The rise in the educational level, awareness about the health of the population is increasing every day. With reference to the knowledge and awareness of patients about medication, it is found that they are having wrong behavior and perception towards medication and medicines. Such wrong perception might take disease in the wrong direction. It has become important to improve the knowledge level of patients about medicines as well as medication.

Aishwaryalakshmi et al. (2012) found that in today's modern era the management and control of diseases have changed through modern medicines. Even after so much benefits, it is found that there are dangerous reaction to medicine is common problem, but still they are able to prevent diseases, sometime become cause of illness, disabilities, and even cause death. The study found that majority of patients do not have any knowledge about the usage of their medicines, poor level of knowledge might put patients at risk and cause serious health problems. There is a need to bring changes in their perception towards medication as well as safe usage of their medicines. Pharmacists must keep educating their customers about medicines and their proper usage.

Alrasheedy et al. (2014) explained that in the study it is found that majority of consumers prefer medicines of original brand as compared to generic medicines. Negative perceptions as well as misconceptions have been noticed in the minds of patients about generic medicines. It is reported that the percentage of patients having such misconceptions about generic medicines might vary from nation to nation. Focusing on patients with specific disease such as psychosis, epilepsy, or renal transplant found to be having more negative perceptions about generic medicines.

Bagge et al. (2013) studied that many patients do not like to have medicines of prescription. However, majority of them feel that it is necessary to consume only medicines given from the prescription. Those patients also trust their doctor regarding their medication and the medicines that are prescribed by their doctors. Majority of the patients feel that they must regularly take their medicines that are prescribed by their doctors for better medication. Patients are also worried about possible side-effects from the medication that they are taking. Educated patients try to avoid medicines that causes more side-effects and they do not like to consume medicines out of their prescribed one that they are consuming unnecessarily.

Yap, Thirumorthy, and Kwan (2016) stated that obedience of patient towards their medication is necessary that remedial benefits are delivered to patients. However, it has been noticed that majority of patients has always been a problem for patients as well as doctors, particularly among older patients. In order to come up with the suitable and effective solution to overcome these issues, it is necessary to keep in mind the socio-economic factors, healthcare providers, medication, and patients.

Objective of the Study

1. To identify the factors that determines the Medication Behavior of Indian patients.
2. To know how the factors affect the medication behavior of Indian patients.

Methodology

The study is empirical in nature in which 141 respondents participated in the study. The data was collected through a structured questionnaire and the method of sampling was convenience sampling. The statistical tool like Factor analysis was applied to reach to end results.

Finding of the study

Table 1 displays the gender, where male respondent is 54.61% and female respondent is 45.39%. Looking at the Age of the Respondents, those who are of 30 to 22 years are 34.75%, those between 35 to 40 years are 36.17%, and 40 years and above are 29.08%. With reference to the number of medication taken, those respondents who have taken nothing are 21.98%, those respondents who are on between 1 to 2 medications are 33.33%, 2 to 4 are 20.57%, and more than 4 are 24.12%. Looking at the Occupation, salaried are 30.50%, business person are 43.26%, and others are 26.24%.

Table1 Respondent's Details

Variable	No. of respondents	Percentage
Gender		
Male	77	54.61%
Female	64	45.39%
Total	141	100%
Age		
30 to 35 years	49	34.75%
35 to 40 years	51	36.17%
40 years & above	41	29.08%
Total	141	100%
Number of Medications taken		
Nothing	31	21.98%
1 to 2	47	33.33%
2 to 4	29	20.57%
More than 4	34	24.12%
Total	141	100%
Occupation		
Salaried	43	30.50%
Business person	61	43.26%
Others	37	26.24%
Total	141	100%

Factor Analysis

Table 2 "KMO and Bartlett's Test"

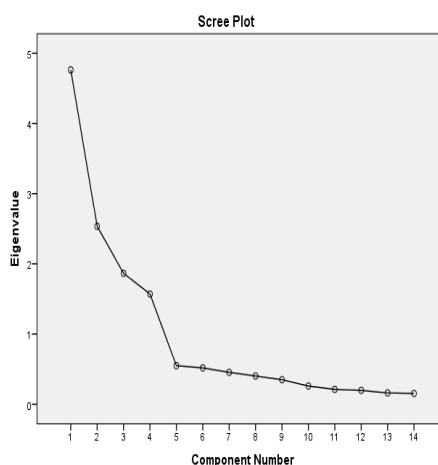
"Kaiser-Meyer-Olkin Measure of Sampling Adequacy"		.804
"Bartlett's Test of Sphericity"	"Approx. Chi-Square"	1160.073
	"df"	91
	"Sig."	.000

The table is showing the KMO value which is 0.804 which fits for further factor analysis.

Table 3 “Total Variance Explained”

Component	Initial Eigen values			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.761	34.010	34.010	3.327	23.766	23.766
2	2.535	18.109	52.119	2.586	18.475	42.241
3	1.866	13.325	65.444	2.481	17.724	59.965
4	1.572	11.225	76.669	2.339	16.704	76.669
5	.550	3.932	80.601			
6	.519	3.707	84.307			
7	.455	3.250	87.557			
8	.403	2.876	90.433			
9	.350	2.501	92.934			
10	.261	1.862	94.796			
11	.213	1.519	96.314			
12	.199	1.419	97.734			
13	.163	1.162	98.896			
14	.155	1.104	100.000			

Table 3 is showing the total variance of the factors in which 4 factors explain total 76% of the variance. The 1st Factor is explaining 23.766% of the variance followed by the 2nd Factor explaining 18.475% of variance, 3rd Factor explaining 17.724% of variance, and the last 4th factor had explained 16.704% of variance.



“Figure 1 Scree Plot”

Figure 1 is the graphical presentation of the Eigen values obtained from the Table 3 “Total Variance Explained.” The figure shows an elbow at 4 components. Hence portrays that total 4 Factors have been extracted.

Table 4 “Rotated Component Matrix^a”

SI. No.	Medication behavior	Factor Loading	Factor Reliability
	Personal factors		.932
1.	I am unable to takeout time for myself	.901	
2.	I ignore my illness and health	.892	
3.	I am busy to ignore my medication	.882	
4.	Medical service provider or hospital is far from my place	.880	
	Social factors		.811
1.	I was misguided by people around me about my disease	.817	
2.	I was misguided by people about medication	.794	
3.	My friend faced side effects by medication	.792	
4.	I had misconception about my medication	.790	
	Cultural factors		.892
1.	I avoid medication due to side-effects of medicines	.899	
2.	I believe in self-medication	.873	
3.	I prefer natural remedies	.868	
	Psychological factors		.851
1.	I have fear of getting diagnosed with some serious disease, therefore avoid visiting doctor	.864	
2.	I visit to my doctor as soon have any health issue	.856	
3.	I feels that physician creates unnecessary fear in the minds of patients about illness	.838	

The 1st factor “Personal Factor” is constituted by 4 variables namely I am unable to takeout time for myself, I ignore my illness and health, I am busy to ignore my medication, and Medical service provider or hospital is far from my place. 2nd Factor is constituted by 4 variables namely I was misguided by people around me about my disease, I was misguided by people about medication, My friend faced side effects by medication and I had misconception about my medication. The factor has been named as “Social factor.” 3rd Factor is constituted by 3 variables namely I avoid medication due to side-effects of medicines, I believe in self-medication and I prefer natural remedies. The factor has been named as “Cultural Factor” and the 4th Factor is constituted by 3 I have fear of getting diagnosed with some serious disease, therefore avoid visiting doctor, I visit to my doctor as soon have any health issue and I feels that physician creates unnecessary fear in the minds of patients about illness. The factor has been named as “Psychological factors”

“Construct wise Reliability”

The values of reliability for 4 constructs were found 0.932, 0.811, 0.892, and 0.851 from construct 1 to 4 respectively.”

Table 5 “Reliability Statistics”

“Cronbach”s Alpha”	“No. of Items”
.827	14

The value of reliability for 4 constructs that includes total 14 numbers of items is 0.827. The criteria minimum value of “Cronbach”s” Alpha (>0.7) was fulfilled.

Conclusion

The literature shows that the behavior of patients towards their medication can be influenced by various factors; it can be socio-economic, age factor, distance, type of disease, etc. The patients choose medication as per their choice as well as pricing. The recommendations given by the physician or pharmacists is of not much concern over money. Two types of patients are noticed in the studies, the one who choose physician as a first choice to consult for their illness, and the other ones are those who prefer self-medication and follow the advices of their family and friends, and later on if they do not recover from illness, they visit doctor. Some patients purchase medicines looking at its price, some look at the brand and advertisements. Doctor’s prescribed medicines are much better and suggested for patients who are suffering from life-long diseases, and for common illness like cough, cold, fever, patients usually buy medicines directly from chemists as per their choice.

The study concludes that the factors such as Personal Factor, Social factor, Cultural Factor and Psychological factors determine the medication behavior of Indian patients. It is also found through the study how these factors affect the medication of the Indian patients.

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