Impact of Covid-19 on the E-Pharmacy and Online Medical Industry with reference to Consumer Attitudes towards E-Commerce and Delivery of Healthcare Products

Journal of Development Economics and Management Research Studies (JDMS)
A Peer Reviewed Open Access International Journal
ISSN: 2582 5119 (Online)
Crossref Prefix No: 10.53422
10(16), 215-224, April-June, 2023
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Impact of Covid-19 on E-Pharmacy and Online Medical Industry with reference to Consumer Attitudes towards E-Commerce and Delivery of Healthcare Products

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Abstract:

This paper throws light on how people's perception on E-pharmacies have changed post the advent of Covid-19. It also aims to determine the various purchases made through online pharma aggregators by the population sampled. A sample of 201 respondents (Aged 18-50 above) was taken to collect the data. The data has been gathered through a questionnaire and the data collected has been tested using Porter's Five forces theory, Technology Acceptance theory & Extended unified theory of acceptance and use of technology. This paper sheds light on the various platforms of Online Consultation, E-pharmacies, medical aggregators, and also gives an additional insight on the whether the respondents prefer the conventional "Brick & Mortar" pharmacies over E-pharmacies while touching upon the factors that impact the sample's buying choices and tastes. The analysis of the collected data determined that, E-pharmacies have seen a rise mainly do the convenience it offers and the said "technology" and "concept" of using e-commerce for medicine & health related purposes have increased purely due to the fact that these sites and aggregators make a conventionally tedious task simpler.

KEY WORDS: *E-Pharma; Covid-19; Online medicine; Brick & Mortar vs E-Pharma*

INTRODUCTION:

In the modern day, the pharmaceutical industry has grown to become one of the top 5 money spinning industries in the world and continues to grow even today. The advent of Covid-19 has led to the skyrocketing of the pharma business and the lines between 'service to mankind' and 'businesses has blurred, to say the least. E-Pharmacies weren't always around and are a relatively new affair. E-Pharmacies began developing in the early days of the year

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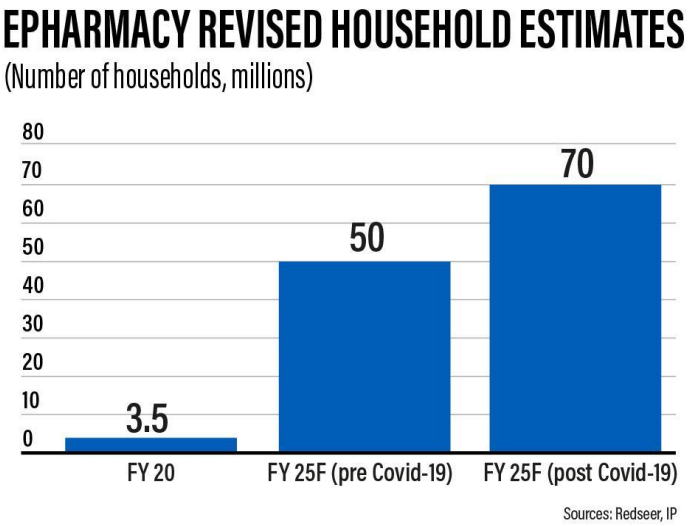
2013 and it caught the attention of the ministry of public affairs in the year 2015. The impact of covid-19 has been devastating for many, but even during these trying times, few fields and industries have been able to rake in the big bucks and this is purely due to the necessity of the items being dealt with by the said industries, in the lives of the users. The upsurge of covid led to people preferring non-contact medical consultations instead of in-person consultations. The Internet has been a steady source of medical data previously; it has just as of late been utilized for online private patient-doctor consultations.

With the pandemic, many preferred to stay in the secure environment of their home, but still required medical assistance for regular ailments. This caused an upsurge in mobile/internet consultations and acted as a revenue stream for hospitals, clinics and freelancing practitioners alike. Just like the online medical consultation market boomed, the E-Pharmacy market also boomed. This could be due to the "mutual-inclusiveness" of the two. The doctors being consulted, prescribed medicines, and these couldn't be bought by going to the pharmacy due factors such as safety during the pandemic, availability of the said drug in the respective pharmacy and sheer logistical issues. This paper aims to shed light on the changes in perception of the users and customers of the pharma industry and also aims to specialize and provide an additional insight on the increase in E-commerce sales of medicines and the preferred E-commerce platform/aggregators.



***Source**:* https://www.thenationalnews.com/business/covid-19-restrictions-boost-india-s-online-pharmacy-sector-1.1073253 *as of September 2021.*

OBJECTIVES

- To determine the extent to which COVID-19 has impacted consumer behavior towards e-pharmacy services.
- To determine the extent to which the pandemic has accelerated the trend towards digital health and its expected impact on the e-pharmacy sector in the long term.
- To compare consumer perceptions of traditional brick and mortar pharmacies with e-pharmacies in the context of the pandemic
- Determining the awareness of people towards the e-commerce of the pharma sector

REVIEW OF LITERATURE

1) Research article - E-Pharmacy impacts on society and pharma sector in the economically challenging Pandemic situation: A Review (2019), Authors: Himani Singh, A Majumdar, N Malviya, this study by Himani Singh, A Majumdar, N Malviya talks about how the e-pharma situation impacts the fate of the pharma sector. 465 participants were used using a snowball sampling method. It was concluded that E-Pharmacies have caused an increase in the revenue of the pharmaceutical sector.

2) Research article - Covid-19 and commercial Pharma; Navigating an Uneven recovery (2021), **Authors: Ortal Cohen, Brian Fox, Nicholas Mills, and Peter Wright**, this study is one of the initial studies on the topic of determining the basis through which pharma sector is bouncing back to normalcy. This study concluded that Covid has increased remote consultations and thereby increased the e-commerce in the pharma sector.

3) Research Article: e-Pharmacies – Bridging the gap in Indian healthcare (2021), Author: Editorial team of Invest India, this study speaks aimed to understand the Modus operandi of pharmacies in relation to online sales**.** It was concluded that E-pharmacy has managed to disrupt conventional pharmacies due to their ease and convenience.

4) Research Article: Consumers' usage and adoption of e-pharmacy in India (2020). Author: Rosenberg, M. This study aims to identify and empirically validate the various factors for adoption, usage and intention to recommend e-pharmacy for purchasing medications by consumers. A study on 1020 respondents was conducted to ascertain the conclusion. It was concluded that many youths prefer e-pharmacies over conventional pharmacies.

5) Research Article: e-Pharmacy – A boon or bane (2022), Author: Raju R, Rakesh M, this study throws light on whether e-pharmacies are a good effect or pose an ill-effect**.** This study draws the conclusion that E-Pharmacies are definitely a boon, provided the sources of products dealt are transparent.

HYPOTHESES:

This paper aims to test the relationship between the advent of covid-19 (**Independent variable**) and change in perception regarding usage of e-pharmacies, online portals for consultation etc. (**Dependent variables**).

It also tests the relationship between the age groups of the respondents (**Independent variable)** & Opinion regarding the future of e-medicine and buying choices of the sampling frame (**Dependent variable).**

H0: The Covid pandemic has had no effect on usage of online forums for purchasing drugs, and there is no change in purchasing habits pre and post lockdown.

H1: The Covid pandemic has indeed had an effect on usage of online forums for purchasing drugs, and there is an evident change in purchasing habits pre and post lockdown, thereby disproving the statement of $\mathbf{H^0}$**.**

H0: E-Pharma does not aid people with mobility issues in the perception of the respondents.

H1: E-Pharma does in fact aid people with mobility issues in the opinion of the respondents, thereby disproving the statement of $\mathbf{H^0}$**.**

H0: Age does not have an impact on the opinion regarding the future of E-pharma's in the longer run

H1: Age does have an impact on the opinion regarding the future of E-Pharmacies, thereby disproving the statement of $\mathbf{H^0}$**.**

H0: Age does not have an impact on preference of E-Pharmacies over Brick-and-Mortar pharmacies.

H1: Age does have an impact on preference of E-Pharmacies over Brick-and-Mortar pharmacies, thereby disproving the statement of $\mathbf{H^0}$**.**

METHODOLOGY:

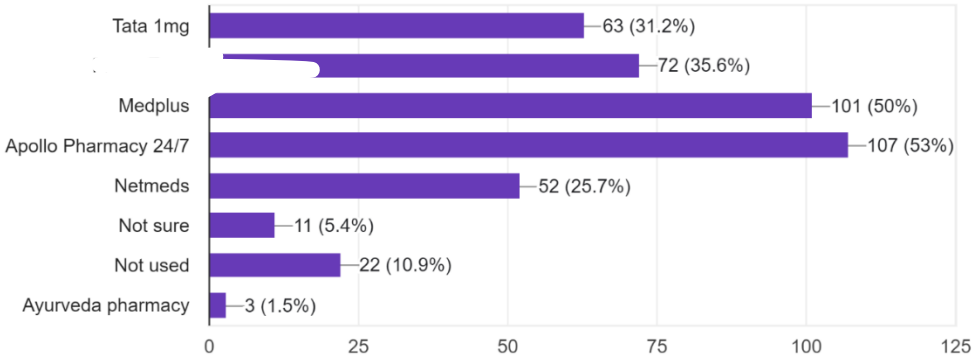
Data from the sample of 201 adults aged anywhere between 18 to 50 above was collected through a questionnaire. The data has been collected using snowball sampling technique and has been interpreted using inferential tests such as ANOVA, Two tailed tests, T-Tests and post-hoc tests. The results have been represented in the form of Frequency Tables, Bar charts and pie charts. The collected data has been interpreted using the statistical tool "SPSS" (Statistical package for social sciences). The collected data has been coded, and then further analysis has been carried out. The results generated have primarily been depicted as tables and charts. The results generated have been shown below.

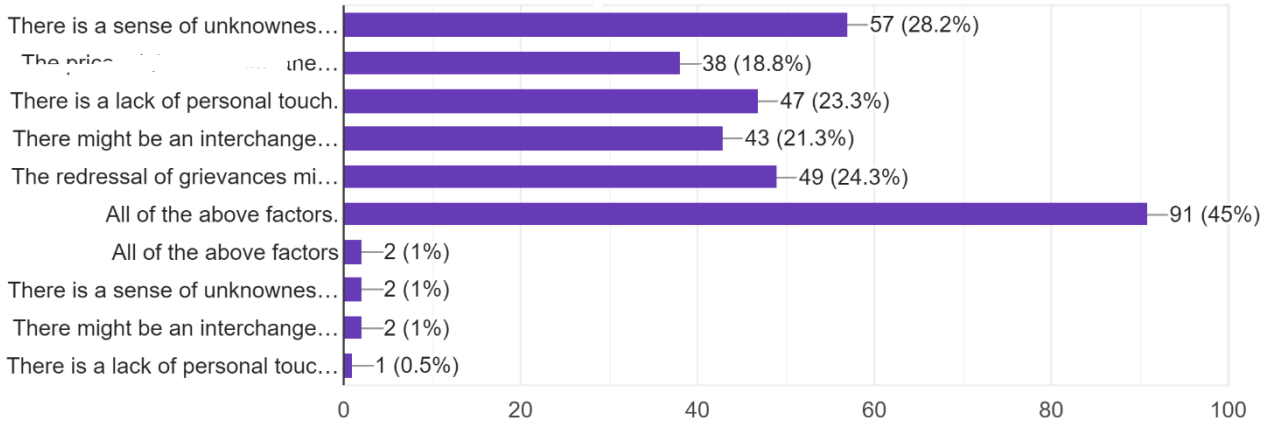
Gender		
	N	%
male	115	57.2%

female	85	42.3%
Prefer not to say	1	0.5%
TOTAL	201	100%

ANALYSIS OF DATA:

Age		
	N	%
18-24	102	50.7%
25-30	23	11.4%
30-40	30	14.9%
40-50	21	10.4%
50 Above	25	12.4%
TOTAL	**201**	**100%**





Bootstrap for Paired Samples Test

		Mean	Bootstrap[a]				
			Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval	
						Lower	Upper
Pair 1	Before - Have you gotten vaccinated for Covid?	.796	.001	.028	<.001	.741	.846
Pair 2	During - Have you gotten vaccinated for Covid?	.458	-.001	.035	<.001	.388	.522

ANOVA					
		Sum of Squares	Df	Mean Square	F
E-pharmacies and online medical consultations in my opinion, have improved the access to healthcare and medical attention to people living in remote areas (or) to people with mobility issues.	Between Groups	28.332	4	7.083	7.280
	Within Groups	190.693	196	.973	
	Total	219.025	200		
change in my perception	Between Groups	12.192	4	3.048	2.580
	Within Groups	231.539	196	1.181	
	Total	243.731	200		

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	77.973[a]	8	<.001
Likelihood Ratio	68.773	8	<.001
Linear-by-Linear Association	.073	1	.786
N of Valid Cases	201		

ANOVA					
Factors preferring E-pharmacies					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	85.241	4	21.310	46.324	<.001
Within Groups	90.165	196	.460		
Total	175.405	200			

FINDINGS & INTERPRETATION:

The **First hypothesis** made an assumption that the Covid pandemic has had no effect on usage of online forums for purchasing drugs, and there is no change in purchasing habits pre and post lockdown.

The testing of this hypothesis was done by performing an "**Paired sample-t test with an additional boot-strap test".**

The variables "Purchasing habits before the lockdown" and "Purchasing habits during and post lockdown" were paired to form one mean variable. The paired variables were teted against the variable "diagnosis of covid" tested were "Age" & "Preference of mode of pharma". The above mentioned variables were tested and the results can be seen in ***Figure-5.***

The results show a definitive relationship between the variables taken into consideration and therefore rejects the assumption made, by proving that age definitely has an impact on the preference of the mode of pharmacies. It also brings to light that certain age groups prefer modern methods whereas few other age groups prefer conventional forms of medicine.

Further Post-Hoc analysis revealed that respondents aged between 18-24 preferred e-pharma the most and the respondents in the age groups of 40-50 and 50 above preferred conventional forms of brick and mortar pharmacies.

The second null hypothesis denies a relationship between change in perception towards E-Pharmacies and the thought that E-Pharmacies aid people with mobility issues

The testing of this hypothesis was done by applying "**Two tailed ANOVA test".**

The variables tested were "Change in perception" & "Opinion on mobility issues". It was noticed by inspection of the raw data collected that, about **20.8%** of the sampling frame strongly agrees that E-pharmacies aid people with mobility issues. The two variables taken into consideration were tested and results of the test can be seen in ***Figure-6***. The results showed a level of significance of **0.054 and 0.084** along with a frequency of 5.133. Since the level of significance is very high and higher than 0.05 it can be ascertained that there is a significant relationship between change in perception and opinion on mobility issues. Analysis of previous hypothesis' showed that there was a significant change people's perception based on gender, and the testing of this hypothesis shows that the change in perception also has a link to the sampling frames opinion on the benefits of e-pharma for people with mobility issues

The third null hypothesis denies a relationship between the age of the sampling frame and the opinion and view concerning the future of online medicine and E-pharmacies

The testing of this hypothesis was done by performing a "Categorical **Chi-Square test**" **(Without a Post-Hoc).** The variables tested were "Age" & "Opinion on future of E-pharmacies". The two variables taken into consideration were tested using the above mentioned categorical chi square test, the results of which can been seen in ***Figure-7.*** The results of the

test showed an asymptomatic level of significance of **0.786.** The high level of significance shows that there is in fact a relation between the age of a person and their opinion on the future of E-pharmacies and online consultations, thereby disproving the statement of Null hypothesis $\mathbf{H^0}$. Further and additional **Uni-Factor** analysis on the variable "Opinion on future of E-pharmacies" revealed that, the respondents belonging to the age group of 18-24 (who have been categorized as the youth) feel that E-pharmacies are definitely the future and majority of the respondents falling in the age category of 40-50 and 50 above feel E-pharma doesn't have much of a future ahead of it.

The **Fourth and final null hypothesis** made an assumption that the age of the respondent has no relation to their preference of E-pharmacies over conventional Brick and Mortar pharmacies. The testing of this hypothesis was done by performing an "**Anova test with an additional Games-Howell Post-Hoc Test".**

The variables tested were "Age" & "Preference of mode of pharma". The above mentioned variables were tested and the results can be seen in ***Figure-8.*** The results show a definitive relationship between the variables taken into consideration and therefore rejects the assumption made, by proving that age definitely has an impact on the preference of the mode of pharmacies. It also brings to light that certain age groups prefer modern methods whereas few other age groups prefer conventional forms of medicine.

Further Post-Hoc analysis (**Games-Howell)** revealed that respondents aged between 18-24 preferred e-pharma the most and the respondents in the age groups of '40-50' and '50 above' **preferred conventional forms of brick and mortar pharmacies**.

CONCLUSION:

Through analysis it has been observed that most of the people who used online means for medical consultations during the lockdown have reverted back to in person physical consultations of their doctor's post returning back to 'pre-covid normalcy'. This shows that despite the penetration of technology, people still are not fully and completely for the usage of technology for their medical needs. This could be due to their psychological perception that, In-person consultation has higher chances of being accurate, which might just be the case. It can be concluded E-pharmacies have truly seen an upsurge when it comes to usage and patronage. This research focuses on a particular region, therefore researches conducted on this topic could explore various other geographic areas. This study also aims to link the advent of "Covid-19" with the rise of online medicine, future studies could throw additional light on the general rise and usage of online medicine in a normal case scenario.

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