



Awareness Levels And The Factors Affecting The Prescriptions Of Novel Drug Delivery Systems In Indian Pharmaceutical Market

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ABSTRACT

In the absence of limited number of newer drugs on the horizon, and dried up pipe line for the newer drugs and molecules globally, there is a lot of effort being put in the development of New Drug Delivery Systems. We are witnessing the launches of newer drug delivery systems, which score over the conventional dosage forms in terms of efficacy, safety and compliance. The scenario in Indian pharmaceutical market is no different. Indian Pharmaceutical companies, look at these NDDS formulations, as the major growth drivers in a sluggish Pharmaceutical market. Through this research we aimed to understand the awareness level of these NDDS in the end users i.e. the medical fraternity. The objective was also to understand the usage frequency and the major factors , which the doctors look into ,while prescribing these NDDS. This research paper will also give an insight into end-customer perception which is the base of formulation of different marketing strategies.

KEYWORDS

Indian Pharmaceutical Market, NDDS, Efficacy, Safety, Availability, Compliance

Introduction:

The Indian Pharmaceutical Market is witnessing a change in the growth trends. From being a high growth^{1,2}, recession proof industry, the market shows a decline in the growth rates, resulting in the loss of revenue.³ This slowdown is a result of many factors including dried up new product pipeline , new patent laws, newer NLEM policies, ban on fixed dose combinations and strict rules and regulations.

As there is a dearth of new molecules and combinations, one of the ways to arrest the de-growth is to launch the existing molecules with a differentiator. Here, comes the importance of Novel Drug Delivery Systems., which provide a unique way to promote the brand with a differentiation. Hence, the scope lies in developing Novel Drug Delivery Systems for the existing molecules.

The aim of Novel Drug Delivery System is to provide a therapeutic amount of drug to the appropriate site in the body to accomplish the drug levels promptly and then maintain the desired drug concentration over a period of time ⁴. The drug- delivery system will deliver drug at a rate controlled by the necessity of the body over a specified term of treatment. These drug delivery systems not only enhance the specific targeting of the active drug but they also act as extended release formulations, thereby increasing the patient compliance. Alternatively, the process of delivering an active drug to achieve a significant therapeutic effect in an efficient manner can be defined as novel drug delivery system ⁵. The evolution of an existing drug from its traditional form to a novel delivery system may considerably improve its performance in aspects of efficacy, safety and patient compliance ⁶.

However, the introduction of the NDDS with advanced technology is the ray of hope as these NDDS formulations are not only gaining acceptance among the medical fraternity but are also showing positive trends over the period of time.

The NDDS basically belong to two major classed Sustained release drug delivery system ⁷.

It is a pharmaceutical dosage form formulated to retard the release of a therapeutic effect such that its effect in the systemic circulation is delayed and/ or prolonged and the plasma profile is sustained in duration. The onset of its pharmaceutical action is often slow, and the duration of its therapeutic effect is sustained. (e.g.: coated granules) Controlled release drug delivery system⁸.

This system has a meaning that goes beyond the scope of sustained drug action. It manifests a predictability and reproducibility in the drug release kinetics. The release of drug substances from a controlled release drug delivery system gains at a rate profile that is not only predictable kinetically but also reproduced from one unit to another ⁹.

A number of NDDS have been introduced in the Indian Pharmaceutical Market. This research aimed at understanding the awareness levels and acceptance levels of NDDS among medical fraternity, who are the end users. We also gauged the major factors which are looked for, by the doctors, while prescribing the NDDS.

Research Methodology:

The research approach used in this study was that of structured and direct survey, using personal interview method. The survey was conducted in 4 metros and 4 non-metro cities from different zones of India. A total of 400 number of respondents (doctors) from different specialties were interviewed. The details are mentioned in table no.1

Table no.1: Spread of respondents

Zone	Type of City	City	No of respondents
North	Metro	New Delhi	50
North	Mini-metro	Jaipur	50
East	Metro	Kolkata	50
East	Mini-metro	Patna	50
West	Metro	Mumbai	50
West	Mini-metro	Ahmedabad	50
South	Metro	Chennai	50
South	Mini-metro	Madurai	50

The study evaluated the following parameters:

- Awareness about the usage of NDDS
- Usage Frequency
- Factors considered while prescribing the NDDS

The results of the interviews were tabulated and analysed to arrive at the results.

Results and discussion:

Awareness about the usage of NDDS

All the respondents across the span of geography and irrespective of age, type of practice and speciality, were aware about the NDDS formulations being present in the Indian Pharmaceutical market. 100 % of the respondents immediately said "yes" when asked about the awareness of NDDS.

This shows the overall noise levels being propagated by the pharmaceutical companies as well the increased visibility/knowledge dissemination about the advances in the NDDS arena. In the past , only the top layer of respondents (in terms of knowledge) were aware about the latest happenings but the trend is now reverse as the latest advances in NDDS are also known to all the respondents.

This may also be due to the increased use of technology such as smart phones and multimedia such as internet being readily

accessible to the respondent

Usage Frequency

As evident from the data collected from the respondents, the frequency of the usage of NDDS are as follows:

- 63 % of the respondents use the NDDS formulations daily in their practice
- 25% use the NDDS formulations every alternate day
- 11% use the NDDS formulations at least once a week
- 1% use the NDDS formulations at least once a month
- None of the respondent was there who has never used a NDDS formulation

Factors considered while prescribing the NDDS

The responses elicited from the respondents are presented in table no.2 :

Table no.2 :Factors considered while prescribing the NDDS

Factors		North	North	North	East	East	East	West	West	West	South	South	South	AI	Overall Rank
		Delhi	Jaipur	Total	Kolkata	Patna	Total	Mumbai	Ah-medabad	Total	Chennai	Madurai	Total	Total	
Efficacy	Rank Score	224	225	449	227	217	444	234	208	442	212	232	444	1779	2
	Coefficient	4.5	4.5	4.5	4.5	4.3	4.4	4.7	4.2	4.4	4.2	4.6	4.4	4.4	
Safety	Rank Score	79	124	203	87	90	177	78	87	165	99	103	202	747	5
	Coefficient	1.6	2.5	2.0	1.7	1.8	1.8	1.6	1.7	1.7	2.0	2.1	2.0	1.9	
Compliance	Rank Score	226	274	500	235	212	447	200	312	512	198	180	378	1837	1
	Coefficient	4.5	5.5	5.0	4.7	4.2	4.5	4.0	6.2	5.1	4.0	3.6	3.8	4.6	
Novel formulation	Rank Score	66	68	134	74	78	152	68	90	158	98	102	200	644	6
	Coefficient	1.3	1.4	1.3	1.5	1.6	1.5	1.4	1.8	1.6	2.0	2.0	2.0	1.6	
Cost effective	Rank Score	112	210	322	140	168	308	154	146	300	140	156	296	1226	4
	Coefficient	2.2	4.2	3.2	2.8	3.4	3.1	3.1	2.9	3.0	2.8	3.1	3.0	3.1	
Reduced pill burden	Rank Score	150	145	295	165	240	405	210	180	390	200	198	398	1488	3
	Coefficient	3.0	2.9	3.0	3.3	4.8	4.1	4.2	3.6	3.9	4.0	4.0	4.0	3.7	

Accordingly the ranking in terms of importance include:

- Compliance
- Efficacy
- Reduced pill burden
- Cost effectiveness
- Safety
- Novel formulation

Conclusions:

The awareness of NDDS coming as newer horizons is more or less well spread across all specialties and geographies across India. In terms of geographical spread, the awareness and acceptance of NDDS is far and wide across the metros and other town classes. The research was carried out in metros as well as mini-metros and the findings were more or less matching in terms of acceptance and willingness to prescribe.

Awareness about the usage of NDDS

All the respondents across the span of geography and irrespective of age, type of practice and speciality, were aware about the NDDS formulations being present in the Indian Pharmaceutical market. The increased awareness clearly points

out towards the future of the NDDS being promising and NDDS formulations becoming mainstay of therapy in times to come. The awareness was attributed to better use of technology and gadgets and world being connected through as a global village. This also emphasized that Indian doctors are now very well versed with the technological advances both in India and abroad.

Usage frequency:

More than 88% of the respondents use the NDDS formulations very frequently and have high acceptance levels of these novel formulations.

Factors considered while prescribing the prescribing the NDDS

When the doctor has to take a decision to prescribe the medication/NDDS, he considers the following factors:

- Efficacy of the formulation
- Enhanced Safety offered by the NDDS formulation
- Patient Compliance
- Novel formulation

- Cost effective
- Reduced pill burden

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