CHAPTER – II

REVIEW OF LITERATURE

2.1 INTRODUCTION

While many pharmaceutical companies have successfully deployed a plethora of strategies to target the various customer types, recent business and customer trends are creating new challenges and opportunities for increasing profitability. In the pharmaceutical and healthcare industries, a complex web of decision-makers determines the nature of the transaction (prescription) for which direct customer of pharma industry (doctor) is responsible. Essentially, the end-user (patient) consumes a product and pays the cost.

Use of medical representatives for marketing products to physicians and to exert some influence over others in the hierarchy of decision makers has been a time-tested tradition. Typically, sales force expense comprises an estimated 15 percent to 20 percent of annual product revenues, the largest line item on the balance sheet. Despite this other expense, the industry is still plagued with some very serious strategic and operational level issues.

For marketing of these types of products companies require more and more skilled Medical Representatives to develop good rapport with their direct customer (doctor). In this system, doctors are the core customers and the major thrust is given to build and retain these customer because they are pulling the demand for products hence companies also give main emphasis in building and retaining these customers.

For marketing of these types of products companies require more and more Medical Representatives to remind their products on daily basis to their direct customer (doctor). Moreover Medical Representatives should have good knowledge of product schemes and offers. Also Medical Representatives is required to have a good rapport with retailers. Medical Representatives also required to ensure good availability of their products to convince doctors and PUSH their products i.e. from to Stockist to Retailer to Doctor.
It has been observed that sometimes there are more than fifteen or sixteen Medical Representatives in a day are meeting with doctors and requesting for same type of products. Although Medical Representatives visits are important for an update on drugs and their use, doctors are, in general, sneaking away, trying to hide from Medical Representatives, since there are too many and they are too pushy and there is too little time, and the representatives probably have noticed that the reluctant doctors have always less time for short meetings and less interest and tend to reduce the time of the visit.

Pharmaceutical Companies are fighting for doctors prescriptions like never before and if anything is certain then it is further intensification of this war. Hence it is essential that detailed literature review is undertaken to study what are the various factors that influences prescription from doctors in favour of a particular brand.

2.1.1 Elements of Pharmaceutical Marketing

S. Kent Stephan, in ‘Is Market Segmentation Right for Prescription Drugs?’ defined ‘MARKETING as selling a product to a customer who gets satisfaction by using the product and thus gives profit to the company’. Therefore, generating profits through customer satisfaction through product offering and services is the main objective of marketing. It was practiced to a great extend by many pharmaceutical companies. Globalization, massive information available through media has led to massive change in customer behaviour, attitude and lifestyle.

Customers today are more demanding and look for value of money. He is more aware of his rights and his expectation has gone up too. Today a customer cannot be taken for granted.

Pharmaceutical Marketing encompasses all finer aspect of Physician management which can result in greater prescription through patient satisfaction. Pharmaceutical Marketing gives better edge to Pharmaceutical companies in not only maximizing physician and patient satisfaction but also in retaining them. Pharmaceutical Companies should relook at their activity plan and retrospective analysis will give a fresh direction.
2.1.2 Product Benefit a Key to Prescription

Barnes, M.L.¹ in “Marketing to a segment of one” said, ‘providing customer a product which is more acceptable to him: We cannot sell grass to a lion. Product should have some tangible and non-tangible benefits’. Doctors cannot be asked to change himself for a product. Many products fail because they are not acceptable to them. Nimesulide, and Nimesulide with Tizanidine, have overtaken Diclofenac, and Ibuprofen because doctors and patients find it more acceptable due to product benefits. Nimesulide may not be great seller in Europe, USA but in India it is. It has unnerved many players. Successes of Taxim, Taxim-O, Nise, Nise-MR, etc are good examples. By prescribing these products, doctors’ feels justified. They are not influenced.

2.1.3 Quality of Promotional Literature Distributed to Doctors by Pharma Companies and its Influence on Doctors Prescription Habits

Many descriptive studies clearly show that much promotional material contains inaccuracies, or at least presents very selective accounts of the evidence about the drug presented². The question this review addresses is whether and how far promotion (including these inaccuracies and biases) affects the attitudes and knowledge of those who are exposed to it.

Very little research has looked specifically at the effect of promotion on attitudes of doctors; much more has examined the effect of promotion on knowledge. The studies here are part of a field of research into the determinants of prescribing - how doctors learn about drugs, and how they come to prescribe new products.

Some studies look directly at the impact of promotion on attitudes and knowledge, by using an experimental approach, by interviewing people about previous exposure, or by following up participants in a promotional event. Others approach the question in a more sophisticated or indirect way.

A 1982 study by Avorn, Chen and Hartley³ is very commonly quoted as evidence of the negative impact of promotion material. They surveyed doctors about two drugs about which there was significant disagreement between scientific and commercial sources of information. There was no scientific evidence of benefit from
cerebral vasodilators and evidence of minimal efficacy for propoxyphene. However promotional material presented them as efficacious and reliable. Avorn et al. argued that by looking at which of these beliefs doctors held they could see which type of information source doctors were really influenced by. Most of the 85 Boston doctors they surveyed said that they relied mainly on academic sources of information, and that advertising, sales representatives and patient preference were minimal influences on their prescribing. However their beliefs about cerebral vasodilators and propoxyphene tended to be more consistent with the commercial literature than with the scientific consensus.

Nearly half (48%) of the doctors who supported the use of vasodilators stated that they were more influenced by scientific rather than commercial sources of information. Avorn et al. say that this discrepancy between where the doctors’ beliefs seemed to come from, and their statements about what influenced them could be because doctors are unaware of how commercial sources influence them, or it could be because doctors are unwilling to admit this influence.

In pharmaceutical market with a clutter of products, it is virtually impossible for a doctor or physician to remember all brands. This could be substantiated by looking at number of brands available in the market for the same molecule or drug. To register a brand in doctors’ minds, recourse adopted by the companies is personal selling, the most essential and vital aspect of pharmaceutical marketing. In pharmaceutical marketing, it is difficult to convince your customer i.e. doctors to try the product as many “me too” products are available and number of representatives visiting physicians is increasing day by day.

While doctors uniformly deny that their understanding of drug is influenced by the promotional material of pharma industry, there is considerable evidence to support the efficacy of the personal encounter with a medical representative in shaping doctors' attitude towards drugs. In a UK survey of general practitioners, 58% mentioned a sales representative as the source of new products they prescribed. The doctors surveyed also felt that sometimes the information on side-effects was not enough and more indications were promoted than registered. There are no such systematic studies in India.
2.1.4 Major Stakeholders in Pharma Marketing

Corstjens (1991) identifies four main buying parties for prescription drugs:

1. Prescriber – prescribing rights vary internationally and this category may include doctors, dentists, pharmacists, nurses and optometrists
2. Influencer – hospitals, nurses, professors, reimbursement agencies
3. Consumer – patient
4. Financier – partly patient, partly government or third party (varies by country), managed health care organization (hospitals, Health Maintenance Organisations etc.)

2.1.5 Effect of Promotional Activities and Advertising on overall Prescription of Medicines by Doctors

Some studies have investigated whether promotion affects overall consumption or sales of medicines. There are several ways to do this. Some studies have simply observed changes that occurred before, during or after promotional activities. These studies are relatively simple and inexpensive but can provide quite convincing evidence if appropriate study periods are chosen and sales or consumption data are available. Other studies have used econometric modelling to investigate the relationship between promotion and sales over time. These methods are so complex and sophisticated that it is hard for non-econometricians to judge whether the models are appropriate. Some studies in this area look at levels of promotion and sales of a range of drugs.

These cannot separate effects of promotion on sales from effects of sales on promotion.

That is, they ignore the fact that companies may heavily promote their most popular drugs because the robust sales have enabled them to pay for more promotion. In theory it is more likely that the relationship between promotion and sales is not a one way causation link but a two way negative feedback loop where more promotion leads to higher sales which leads to more promotion.

Cleary’s small study looked at what happened when the level of promotion varied naturally over time, when a sales representative was away on a sales training
course. He examined trends in numbers of new prescriptions for three third generation antibiotics in one hospital. He found that when the sales representative was away the numbers of new prescriptions for this product dropped. This did not happen to the other products studied, and there was no correlation between the pattern in this hospital or regional or national sales. This study has the advantage of avoiding any effect of sales on promotion: i.e., the change in level of promotion was not a result of changes in the level of sales.

Similarly Dieperink and Drogemuller\(^7\) report their investigation of the reasons for a dramatic increase in the use of an atypical antipsychotic agent in their Minneapolis hospital. The most plausible explanation for this was a Grand Rounds presentation sponsored by the manufacturer of the product.

Stern\(^8\) examined the number of visit to doctors where topical tretinoin was prescribed and the number of articles in the popular press and medical publications discussing its use. In 1988 a highly publicised study suggests that topical tretinoin improved the appearance of aged skin, and it was prescribed at an increasing number of consultations in the USA after this. Most of these prescriptions were probably for the unlabelled unapproved use of tretinoin to treat the effects of aging. Stern’s time series data are sporadic but, like Cleary’s and Suresh’s work, the paper suggests a link between promotion and overall sales.

Mackowiak and Gagnon\(^9\) used econometric modelling to investigate the relationship between promotion and demand for medicines. They looked at diuretics and benzodiazepines from 1977 to 1981, to investigate how overall Drug promotion:

What we know, what we have yet to learn expenditure on promotion, and individual company promotional expenditure affected demand for a group of medicines (i.e. overall market size), and how individual company promotional expenditure affected demand for a particular drug (i.e. market share). They used IMS data on the extent of sales representative activity and the extent of journal advertising, and converted these into estimates of expenditure. Advertising agency fees were not included and this seems a significant omission. IMS also provided data on the number of new prescriptions for the products studied. Using ARIMA (Auto Regression
Integrated Moving Average) modelling, they could find no relationships between promotional expenditure and demand in any of the three areas outlined above. They suggest that this may be due to limitations of the methodology, or it could suggest that companies are spending so much on advertising that they are getting little marginal return for extra dollars spent. Although this study clearly has methodological limitations (such as the choice of two drugs whose markets were not very dynamic in the period studied), it seems to make a minimum of unwarranted assumptions.

The ideal way to investigate this area would be, as Mackowiak and Gagnon suggest, to ask manufacturers to experimentally vary promotion over regions and times, monitor the effect of this and publish the results. It is possible that pharmaceutical companies have done many such studies but not published them.

In the absence of such data, the published studies do provide considerable circumstantial evidence for a positive, but not always consistent, association between promotion and overall sales.

Similarly, using data on expenditure on advertising (from Competitive Media Reporting) and prescribing (from the National Ambulatory Medical Care Survey), Zachry et al\textsuperscript{10} found positive correlations for some medicines and classes, but not for others. They based quasi experimental time series techniques.

There were significant positive relationships between advertising expenditure and the number of prescriptions written for Zocor and Claritin, but a negative relationship between advertising for acid peptic disorder medications and prescriptions for Zantac.

Krupka and Vener\textsuperscript{11} compared advertising in the New England Journal of Medicine and the Journal of the American Medical Association (JAMA) in 1972, 1977 and 1982, with the number of prescriptions filled for the 15 most advertised drugs in 1972, 73, 77, 78, and 82 [40]. They found that about a fifth of the 15 most advertised drugs were also one of the leading 15 drugs in terms of the number of prescriptions filled for the five years analysed. Ten of the 15 most advertised drugs in
1972 had advanced their ranking in terms of prescription numbers between 1972 and 1973, and two were in the same position.

Dajda\textsuperscript{12} plotted the number of advertisements received in three GP practices in Swansea by therapeutic group, and the number of prescriptions written for drugs in these groups. He found a high correlation.

A small study reported in a letter to the Lancet by Suresh et al\textsuperscript{13}, suggests that useful medicines may be relatively underutilized if they are not promoted. They describe the under use of adenosine, an effective first line treatment for supraventricular tachycardia, until it started to be marketed commercially in 1991. The medicine was available and cheap, and there was good evidence of its usefulness, but it was underused until an advertising campaign was carried out.

Advertising of prescription drugs is permitted in United States with prior approval and permission of FDA but in India advertising is restricted according to Drugs and Magic Remedies (Objectionable Advertisements) Act, 1954 and can be used only to promote OTC (Over the Counter) drugs that are used for minor ailments and not for prescription drugs.

Research by Walton\textsuperscript{14}, a pharmacist and advertising executive, suggests that recall of print advertisements is associated with prescribing. The study published in 1980, results are presented from a study of 1000 doctors in private practice who were shown print advertisements with drug and company names and logos blacked out. They were asked whether they had seen each advertisement before, and were then read a list of the advertised products and asked if they had prescribed or recommended these in the last month. For 95\% of the advertisements the percentage of doctors who prescribed them was greater for those aware of the advertisements than for those not aware of them. However the effect of specialty was not controlled for. That is, doctors may be both more likely to notice and recall, and to prescribe, drugs relevant to their specialty.

A similar study by Walton\textsuperscript{15} appears to be a smaller version or subset of this study. Matalia\textsuperscript{16} reviews a range of advertising industry related studies that claim to
show the effectiveness of print advertising. In the first, family practitioners and internists evaluated advertisements. ‘Prescribing data’ were also collected but it is unclear whether these are self assessments of willingness to prescribe, or actual prescription data. Matalia claims that as nonprescribers became more familiar with the advertisements their willingness to write trial prescriptions increased.

It seems from his earlier description that this study assessed correlations between attitudes and familiarity with advertisements, so he seems to be extrapolating from data collected at one point in time from a range of people, to trends over time.

The account of the second study is somewhat more convincing, but again the methods and analysis are not described well enough for proper evaluation. The study was an experiment where different groups of doctors (who had prescribed similar numbers and value of prescriptions in the previous six months) were sent identical journals but with varying numbers of advertisements for a mature cardiovascular drug (i.e. one that had been on the market for some time). Those in the group who received the most advertising increasingly prescribed the drug. After 12 months the manufacturers’ market share was 4% higher in the high intensity and 2.3% higher in the medium intensity group, than in the lower group.

The third study was also a kind of experiment. Companies stopped all promotion for four products from nine months before the study. Four advertisements were designed for the study and placed in half the copies of eight journals. Doctors were interviewed, and those who had received the advertisements were more likely to recall the products than those who had not. However, prescribing was not analysed: the outcome variable was simply recall of the products.

As Lexchin and Mintzes (2002)\textsuperscript{17} argue, if advertising results in these negative outcomes with physicians who are more knowledgeable about drugs and can more easily access objective information, “how realistic is it to believe that consumers will be positively affected?”].

Understanding Doctors Behavior in Pharmaceutical Marketing, unlike direct 'seller to user sales' pharma selling is a multiple tier process. Here the consumer / user
are not in direct contact with the salesman. Here the medical practitioner decides on the behalf of patient /consumer, which product needs to be bought, in what quantity, when to be consumed and how long to consume. Hence, regular, continuous study of prescribing behaviour of physicians is very important for pharmaceutical marketer.

2.1.6 Effect of Samples on Prescribing

There is little literature on the effect of samples on prescribing. Backer et al.\textsuperscript{18} report an ethnographic study of 18 medical practices. At least four weeks of fieldwork were done in each practice. Samples were used in 19.8\% of the 1588 patient encounters observed. This varied widely between practices (range 4\% to 39\%) and also between doctors within each practice.

Reasons given for using samples included, to test for efficacy and tolerability, to offer temporary relief or convenience, and/or to reduce costs to patients.

In Morelli and Koenigsberg’s\textsuperscript{19} study122 samples which were dispensed as new medication for chronic problems were accompanied by a prescription for the same brand 48\% of the time. This finding is hard to interpret, but it may suggest that the availability of a sample influences the choice of brand prescribed. This area needs further investigation.

Chew et al.\textsuperscript{20} used three hypothetical case studies and asked their respondents (131 general medicine and family physicians) which medicine they would prescribe. They were then given a list of samples available and asked whether they would prescribe their drug of choice, or give a sample of another drug. For a patient with hypertension (and no health insurance) almost all respondents (92\%) ideally chose a diuretic or beta-blocker (consistent with practice guidelines).

However when samples were available, 27\% (35 doctors) said they would dispense a sample. In almost all of these cases the sample was a different class of drug (e.g. ACE inhibitor or calcium channel blocker). Almost all of those who would give a sample (97\%) said avoiding cost to the patient was an important or very important reason for their choice. A follow-up scenario, in which the patient returns, with their hypertension well controlled on the sample drug, and now with health insurance, was
presented. Of the 35 doctors who had said they would dispense a sample, 24 would now write a prescription for the sample drug, to avoid switching the patient. If this reflects real behaviour, it suggests that in some circumstances drug samples may strongly influence prescribing.

“A study by Early EK.21 has shown that samples influence prescribing choices.”]. These can be used in a number of different ways to benefit not only the doctor but the patient as well. Samples allow practitioners to provide certain medications to their patients free of charge. The trial doses allow the patient an opportunity to see if the particular medication works or not. It is obvious that the only medications that can be given are the ones that companies leave as samples. Some problems may arise when patients find out these medications are too expensive when paying out of pocket.

2.1.7 Gifts and Other Freebies Influence on Doctors Prescription Habit

Doctor-targeted promotion takes a variety of forms:

- Gifts, such as small stationery, travel to conferences and educational events,
- and, some executive even said, cash
- CME, Sponsorship of conferences and educational events.
- The use of key opinion leaders – i.e. senior clinicians and medical educators as speakers at learned conferences.

The doctors are influenced by drug companies in all sorts of ways. The methods cover the whole spectrum from subliminal to brazen, from little pens to free prescription pads.

Doctors are obviously not undiscerning recipients of advertising and other forms of promotion. Smith (2003)22 says “Your opinion may not be bought, but it seems rude to say critical things about people who have hosted you so well.” He goes on to say that the easy dichotomy of pharmaceutical giants as villains and doctors as innocent victims is over-simplifying the situation

Clearly doctors need to use drugs in order to deliver their services, and it is also reasonable that pharmaceutical companies should be allowed to promote their
But surely doctors should be looking also to independent sources of information, and how did we reach a point where so many doctors won’t attend an educational meeting unless it’s accompanied by free food and a bag of ‘goodies’?

Separate studies by McInney, Scheidermeyer, Lurie et al (1990), Banks and Mainour (1992) and Chren, Landefeld and Murray (1989) all found that there was a strong correlation between doctors’ tendencies to recommend drugs and their receipt of gifts/sponsorship/ non-related payment etc. Studies by Wazana (2000) and Thomson, Craig and Barnham (1994) all show that gifts impact on doctors’ prescribing practices. Wazana (2000) examined 29 empirical studies of the impact of interactions between the medical profession and Big Pharmaceutical companies.

Komesaroff and Kerridge (2002) also point to the many studies that indicate the advertising rather than clinical evidence alone affects clinical decision-making. They cite Peay and Peay (1988) who found that physicians exposed to advertising are more likely to accept commercial evidence, rather than well-established scientific views.

Most (55%) of the family medicine residents surveyed by Sergeant et al. said that they would attend a private dinner with a sales representative paid for by a company. Thirty-six per cent felt that gifts from sales representatives to doctors resulted in higher drug costs for patients. The doctors surveyed by Aldir et al. felt that smaller gifts were more appropriate than more valuable ones.

Of the Canadian doctors surveyed by Strang et al. 85% agreed that sales representatives should be able to offer free samples, but 74% felt they should not be able to offer all expenses paid trips to meetings organized by companies. More than half of the residents surveyed by Keim et al. reported accepting gifts such as textbooks because they needed financial assistance with their education.

Seventy-eight per cent of programme directors and 92% of medical students believed it was appropriate to accept textbooks from drug sales representatives. Keim et al. found that those who were more sensitive to bioethical issues in general were less willing to accept non educational gifts.
Twenty five per cent of resident doctors in Virginia surveyed by Sigworth et al.\textsuperscript{33} said they would not want patients to know that they had received gifts and awards from drug companies and would try to hide this.

In a simple but clever research design, Palmisano and Edelstein\textsuperscript{34} asked 100 medical students and 100 family planning nurses about the propriety of various people accepting gifts. Of the 50 medical students who were asked, 85.4\% felt it was improper for a government official to accept a US$50 gift from someone who wanted to gain a contract. Of the other 50 students, 46\% felt it was improper for a medical student to accept a US$50 gift from a drug company. The nurses were divided into three groups and asked different versions of the question. Of those who were asked, 97\% felt it was improper for the government official to accept the gift, 64\% felt it was improper for a resident doctor to accept the gift, but only 30\% felt it was improper for a nurse practitioner to accept the gift.

Amongst the Turkish doctors surveyed by Güldal and Semin\textsuperscript{35} 33\% felt that gifts were not ethical, 36\% felt they were not ethical in some respects, and 21\% felt that gifts were ethical.

Gibbons et al.\textsuperscript{36} asked doctors and patients about the same list of 10 gifts, and found that patients rated the gifts as less appropriate and more likely to influence prescribing than doctors did. Those with higher levels of education (i.e. those who had completed high school) were more likely to think that the cost of gifts was passed on to patients. Before the survey about half of the patients (54\%) were aware that doctors accepted such gifts. Of those who were previously unaware of this, 24\% said that learning about them had changed their perception of the medical profession.

Most (56\%) of the psychiatry trainees surveyed by Hodges\textsuperscript{37} felt that accepting gifts did not influence their prescribing. In the Aldir et al.\textsuperscript{38} study few doctors thought that a gift of a textbook influenced prescribing habits (less than 6\%).

Similarly, they felt that lunches or dinners provided by the industry had little influence on them, although they did feel that free samples affected their prescribing.
In Barnes and Holcenberg’s study\textsuperscript{39}, 60% of medical students and 75% of pharmacy students felt that promotional practices influenced prescribing.

Patients surveyed by Early E K, also felt that gifts from the pharmaceutical industry to doctors were likely to influence prescribing (6% said it never did, 18% said rarely, 43% sometimes, and 16% frequently). They were more likely to disapprove of gifts (except free samples) if they felt that they influenced prescribing and increased cost. One limitation of this study was that many patients were unaware that such gifts were given, so had little time to consider their opinion of them while completing the questionnaire.

Eighteen per cent of the Turkish doctors in Güldal and Semin’s study felt that gifts strongly affected prescribing, 12% felt they had a medium effect, 44% low, and 27% felt that they had no effect on prescribing.

Madhaven et al.\textsuperscript{40}, found that physicians were more likely to think that other doctors prescribing was influenced by gifts, than that their own was. They also found doctors with more patients were less likely to agree that most doctors are influenced by gifts and less likely to think it is inappropriate to accept gifts.

\subsection*{2.1.8 Medical Representatives Influence on Doctors Prescription}

Currently, there are approximately 100,000 \textsuperscript{41}pharmaceutical medical representatives in India pursuing prescribers. A pharmaceutical representative will often try to see a given physician every few weeks. Representatives often have a call list of about 250 to 280 physicians that should be visited in 4-6 week cycles.

Because of the large size of the pharmaceutical sales force, the organization, management, and measurement of effectiveness of the sales force are significant business challenges. Management tasks are usually broken down into the areas of physician targeting, sales force size and structure, sales force optimization, call planning, and sales forces effectiveness.

Peay and Peay \textsuperscript{42} in 1988 clearly showed a relationship between seeing sales representatives and prescribing one new drug, and are often quoted by others. They
interviewed 124 doctors in private practice, about their perceptions and use of temazepam, a benzodiazepine hypnotic, and their sources of information about it. The study was done in 1981; approximately a year after temazepam was introduced in Australia. They found that contact with a sales representative about temazepam most consistently predicted a favourable reception of temazepam at various points in the adoption process.

Doctors who had seen a sales representative reported earlier awareness of temazepam, prescribed it earlier, were more likely to rate it as a moderate (rather than minor) advance over other drugs, were more likely to have prescribed it, reported prescribing it earlier, and were more likely to prescribe it routinely in preference to other alternatives.

Compared to those who saw sales representatives less frequently, those who saw representatives more than once a week were aware of temazepam earlier, prescribed it earlier, and (amongst GPs) were more likely to prescribe it than other alternatives. Peay and Peay found no relationship between doctors’ professional involvement, or involvement in the medical community, and beliefs about temazepam.

A useful study by Gönül et al. explored the impact of visits by sales representatives and samples, on prescribing. They used data from Scott Levin Inc. (a company which describes itself as a leading pharmaceutical consulting firm) derived from survey sheets filled in by doctors. These included prescribing, minutes of detailing received for different drugs, and number of samples received, for a ‘typical’ week in each month, from January 1989 to December 1994. Gönül et al. looked at one condition and seven drugs used to treat it.

Throughout the article it is unclear whether these were different drugs, or different brands of the same drug, and this is a major weakness of the study. Using a multinomial logit model, it appears that exposure to personal selling related to a medicine (visits from sales representatives and samples) increased the probability of that medicine being prescribed (other things being equal).
However, the study also showed that excessive detailing or samples did not increase sales further, and that doctors who saw a high proportion of Medicare or Health Maintenance Organization patients were less influenced by promotion. The authors are from marketing schools, and they conclude that the study provides no evidence that personal selling has negative social consequences.

Only thirty five per cent of the psychiatry trainees in Hodges’ study agreed that discussions with sales representatives did not influence their prescribing behaviour. This attitude was less prevalent among more senior trainees. Among the Canadian family medicine residents in the Sergeant et al. study, 34% agreed and 43% disagreed that sales representatives influenced their prescribing habits.

In emergency medicine, Keim et al. found that 75% of programme directors, but only 49% of residents, believed that marketing techniques affect residents prescribing practices. Seventy per cent of the Canadian doctors surveyed by Strang et al. agreed that sales representatives affected physicians’ prescribing habits. Thirty one per cent of the internal medicine residency programme directors surveyed by Lichstein et al. were concerned, and 13% were very concerned, about the impact of sales representatives on the attitudes and prescribing behaviours of their residents. Most directors of family practice residency programmes in the USA (56%) felt that the information and resources provided by sales representatives affected the prescribing of residents and practicing doctors.

Bansinath et al. state that 56% of Indian cardiologists report that medical sales representatives had played a role in their decisions to prescribe brand or generic drugs.

Sixty three per cent of doctors in a Turkish city surveyed by Güldal and Semin felt that information from sales representatives did not influence their prescribing. Those who found information from sales representatives reliable tended to report that this information had more influence on them.

American general practitioners surveyed by Pitt and Nel rated sales representatives as the third most important influence on their prescribing decisions,
advertisements as fifth and gifts as sixth. However, this study had a low response rate and excluded journal articles in the list of possible influences.

Clinical pharmacists involved in family medicine residency programmes, surveyed by Hume and Shaughnessy, rated sales representatives, along with journal articles, as the third most important source of drug information influencing the prescribing of family medicine residents.

In Sigworth et al.’s study of resident doctors in Virginia in 2000, 91% reported that sales representatives had some effect on their prescribing. The authors suggest that this high rate could be the result of recent publicity and discussion on these issues, although the residents had not had formal educational sessions on drug promotion.

2.1.9 Medical Representatives Role in Medical Education

In Bucci and Frey’s study, 17 of US family practice residency programmes, 48.3% of programme directors felt that sales representatives were a valuable drug information resource for residents, and 55.1% felt they were valuable for practicing doctors.

In Dunn’s study of Ontario physicians, about 10% of doctors rated ‘pharmaceutical handouts’ as an important or very important continuing medical education resource (10.9% of primary care doctors and 12.2% of hospital-based specialists).

Hayes et al surveyed general practitioners in the UK about their involvement in and attitudes towards industry involvement in continuing medical education. They found that most GPs (90%) had had meetings at their practice for which pharmaceutical companies organized the educational content. The characteristic of these which was most disliked, particularly by trainers and those in practice for more than eight years, was the promotional aspect.
Thirty-two per cent of the psychiatry trainees surveyed by Hodges 52 agreed that Medical Representatives provide useful and accurate information on new drugs (25% for established drugs).

Fifty-eight per cent of family medicine residents in Sergeant et al.’s 53 study felt that the literature provided by sales representatives was useful.

Ninety-two per cent of the Canadian doctors surveyed by Strang et al.54 felt that sales representatives had product promotion as their major goal, and 80% felt they overemphasized medicines effectiveness.

Forty-seven per cent of the doctors in Eaton and Parish’s study 55 felt that they were not able to obtain an unbiased assessment of a newly introduced drug. Most of them felt that most drug information was too commercial and therefore biased.

In a New Zealand study, Thomson et al.56 found that 58 out of a sample of 67 doctors saw sales representatives. In response to an open-ended question about why, 56 of them gave a reason related to learning about new or existing products.

The director of the Pharmaceutical Manufacturers’ Association of New Zealand described a survey of doctors, in a letter to the editor of the New Zealand Medical Journal. Without giving methodological details, he claimed that most New Zealand doctors felt that Medical Representatives are a good source of information about drugs and recognize practitioners’ information needs, but are over-biased towards their own products.

In contrast, only 16% of UK GPs surveyed by Hayes et al.57 found visits by Medical Representatives to be educationally valuable. University and community practice doctors surveyed by Shearer et al. rated direct mail, journal advertising and detailers as the three least reliable sources of drug information.
2.1.10 Continued Medical Education (CME) or Company Funded, all Expenses Paid Trips to Educational Symposia

In another important study Orlowski and Wateska\textsuperscript{58} analysed the effect on prescribing of Drug Company funded, all expenses paid trips to educational symposia in resort locations. Using the hospital pharmacy inventory, they tracked the use of two drugs within one institution 22 months before and 17 months after each symposium about them. They also collected data on the national usage of these drugs, and informally interviewed the doctors who had gone to the symposia. Most of the doctors said that the symposia would not influence their prescribing, but some said that they might make them think of the drug more and the symposium might convince them of the benefits of the drug.

Orlowski and Wateska found a dramatic and statistically highly significant increase in the use of the drugs in the hospital after the relevant symposia. These increases were not reflected in national data, and they did not seem to affect the hospital’s use of alternative drugs. This study provides evidence firstly, that exposure to promotion increases prescribing, and secondly that it can do so whether or not those exposed consider themselves vulnerable to such influence.

Most of the psychiatry trainees surveyed by Hodges (77%) agreed that Medical Representatives support important conferences and speakers. Most family medicine residents surveyed by Sergeant et al. agreed that the content of continuing medical education activities should be set by the doctors organizing them, rather than the company sponsoring them.

2.1.11 Impact of Sponsorship on Content of Continuing Medical Education Courses

Bowman\textsuperscript{59} analysed the content of two continuing medical education sessions on calcium channel blockers, funded by different companies, and taught by faculty members. In one of the courses the funding company’s drug was mentioned many more times than other medicines. In both courses the clinical effect ascribed to the funding company’s drug were more positive.
There were few comparative statements made, but most favoured the funding company’s drug. This bias was in spite of university policies being instituted between the courses that required the institution rather than the company to control the course content. Bowman and Pearle 60 then examined self-reported changes in prescribing patterns related to three company-funded continuing medical education courses. The method they used is not very satisfactory. They attempted to ask course participants before, and six months after each course, about their prescribing of the group of drugs covered in the course.

For two courses there was no matching of responses from individuals’ pre and post the course, and the response rates were not high. Bowman and Pearle conclude that in all three courses the sponsoring company’s drug had the greatest increase in absolute terms. However, some increases occurred in prescribing of other company’s drugs. This study is limited by its reliance on self-report instead of prescribing data. Participants may have wanted to please the authors by saying that they prescribe more of the drug that was presented as the best at the course, if the authors were also the course organizers (this is unclear in the papers).

2.1.12 Other Factors Influencing Doctors Prescription Habits

Peer influence: Key opinion leaders

A study by Corstjens,M 61. Opine that Key opinion leaders (KOL), or "thought leaders", are respected individuals, such as prominent medical school faculty, who influence physicians through their professional status. Pharmaceutical companies generally engage key opinion leaders early in the drug development process to provide advocacy and key marketing feedback. Some pharmaceutical companies identify key opinion leaders through direct inquiry of physicians (primary research).

2.1.13 Colleagues

Physicians 62 acquire information through informal contacts with their colleagues, including social events, professional affiliations, common hospital affiliations, and common medical school affiliations. Some pharmaceutical companies identify influential colleagues through commercially available prescription writing and patient level data.
2.1.14 Physician Targeting

Corstjens, M ⁶³ in his study points out that marketers attempt to identify the universe of physicians most likely to prescribe a given drug. Historically, this was done by measuring the number of total prescriptions (TRx) and new prescriptions (NRx) per week that each physician writes. This information is collected by commercial vendors. The physicians are then "deciled" into different groups based on their writing patterns. Higher deciles are more aggressively targeted.

Some pharmaceutical companies use additional information to influence doctors prescription such as:

- profitability of a prescription (script),
- accessibility of the physician,
- tendency of the physician to use the pharmaceutical company's drugs,
- effect of managed care formularies on the ability of the physician to prescribe a drug,
- the adoption sequence of the physician (that is, how readily the physician adopts new drugs in place of older, established treatments), and
- the tendency of the physician to use a wide palette of drugs influence that physicians have on their colleagues.

Data for drugs prescribed in a hospital are not usually available at the physician level. Advanced analytic techniques are used to value physicians in a hospital setting. [25]

In a 2002 physician survey by the Boston Consulting Group⁶⁴, 54 percent of physicians reported that formularies have a major impact on prescribing decisions. Among the other factors identified as having a major impact were peers (50 percent) and clinical practice guidelines (47 percent), with pharmaceutical representatives at 14 percent.

A 2007 physician survey by the Tufts Center for the Study of Drug Development ⁶⁵ yielded broadly similar results: asked to identify factors very important in prescribing decisions, continuing medical education (67 percent), information from peers (43 percent), and payers’ decisions (37 percent) outweighed information from pharmaceutical companies (13 percent).
In a 2008 KRC Research survey, physicians reported giving more weight to their clinical knowledge and experience, the patient’s particular situation, peer-reviewed journal articles, clinical practice guidelines, their colleagues and peers, and the patient’s financial status than to information from pharmaceutical companies when prescribing medication. In identifying information that influenced prescribing a “great deal,” about five times as many physicians (55 percent) identified peer-reviewed literature and three times as many (35 percent) identified the patient’s formulary as identified information from pharmaceutical companies (11 percent).

According to Fugh-Berman et al, there has been some controversy with the idea of doctors having periodic contact with pharmaceutical company representatives. Every year more than $11 billion is spent on drug marketing, with half of the budget funding sales representative work. It is important to identify the extent of this relationship and its ultimate impact on providers’ attitudes, behaviors, and knowledge. It is also important to understand how this potentially affects the patients.

Pharmaceutical medical representatives are hired for their personalities and based on criteria that would make them excellent sales people. They are trained to observe and understand the best approaches to take when interacting with a healthcare provider. They use information they gather and understand what it takes to sell the drugs they represent. Not all practitioners have the same attitude toward medical representatives, thus conversations and pitches need to be tailored to fit the particular personality type.

Ahari et al testifies eight different categories that a physician could fit into: 1. Friendly and outgoing, 2. Aloof and skeptical, 3. Mercenary, 4. High-prescribers, 5. Prefers a competing drug, 6. Acquiescent docs, 7. No-see/No-time docs, and thought leaders. Each category is different and the company provides descriptions to determine the best ways to approach a sale.

Lal, A. Moharana et al Pharmaceutical companies can also gain influence through research and prescription tracking. Information about prescription purchases can be bought by large health information organizations like IMS Health, Dendrite, or Verispan. These companies keep track of prescriptions filled in a given community.
These records are then sold by pharmacies with details of personal information excluded. The pharmaceutical companies are the largest buyers of this information, which can be used to monitor marketing trends as well as identify which drugs need a different marketing approach. Representatives “see how many of a physician’s patients receive specific drugs, how many prescriptions the physician writes for targeted and competing drugs, and how a physician’s prescribing habits change over time.”

In addition, this information allows representatives to see how easily providers can be influenced. They not only figure out ‘who’ the healthcare providers are, but ‘what’ drugs are being prescribed, and ‘how’. A tremendous amount of information can be gathered and used. As a result, some practitioners who do not meet standards set by the company may not get the attention that other ‘high-prescribers’ would.

Early EK.Studies have also shown that small gifts could have some type of influence on behavior. “A physician who is the recipient of a gift may recommend products made by the gift-giver without due consideration of other cheaper or more effective options.” Gifts have encompassed a broad range of items from pens and pads to medical reference books and continuing medical education trips.

According to Stinson, E. Ray et al. However, all the influence does not come from the giving of small gifts. They also come from the advice and talks given by physicians. Practicing licensed physicians have agreements with pharmaceutical companies all across the country to speak on behalf of the company for what can be a modest honorarium. These companies provide information and even specially designed presentations for these physicians. They stand before their colleagues and introduce a drug that is subtly presented within a health education talk. It may not be uncommon for key information to be conveniently left out in order for the focused drug to stand out. Many times there is no direct push for these medications to be used but subtle nuances or messages are used to send the message across.
2.2 CONCLUSION

The pharmaceutical industries throughout the World are heavily involved in aggressive drug promotions, with a clear aim to change the prescribing habits of physicians and to encourage the self-medication of patients. Broadly, drug promotion refers to all the informational and persuasive activities of the pharmaceutical industries, the effect of which is to induce prescription, supply, purchase, and use of medicinal drugs. It includes the activities of medical representatives, drug advertisements to physicians, provision of gifts and samples, drug package inserts, direct-to-consumer advertisements, periodicals, telemarketing, holding of conferences, symposium and scientific meetings, sponsoring of medical education and conduct of promotional trials. The pharmaceutical industries has the right to promote its products, but it should do so in a fair, accurate, and ethical manner. The promotional claims need to be reliable, truthful, informative, balanced, up-to-date, and capable of substantiation in good taste. However, now a days, whilst the promotional methods have become very sophisticated and effective, it was found that while promoting their products, the pharmaceutical industries does not adhere to these ethical principles. Hence, in most situations, these lead to irrational use of drugs. This unfortunate situation could be tackled only by the multiple prong strategy involving government, pharmaceutical industries, doctors, medical associations and consumers. The government is required to formulate some guidelines in addition to developing their own code. The doctors and consumers are required to be educated on the promotional practices and abuses committed by the pharmaceutical industries and different ways to tackle those. pharmaceutical industries should self regulate their pharma promotion and focus more on patient benefit which ultimately generate more prescriptions from doctors.

The major source of information about drugs for doctors was journals and visits by medical representatives. Pharmaceutical companies should invest more in training the Medical Representatives as to make them more productive as well as attract talent.
References


3) Ibid

4) Ibid


39) Barnes, Charles J. Holcenberg, John S. Student reactions to pharmaceutical promotion practices. Northwest Medicine 1971; 70:262-266.


52) Hodges, Brian. Interactions with the pharmaceutical industry: experiences and attitudes of psychiatry residents, interns and clerks. Canadian Medical Association Journal 1995; 153:553 - 559.


63) Ibid

64) 2002 Boston Consulting Group proprietary survey, n=399.


