The Effectiveness of Medical Engagement Strategies on Doctor's Professional Development and Prescriptions Decisions

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Abstract:- **Pharmaceutical companies' medical engagement is becoming a popular marketing technique where firms' interact with doctors to influence their prescribing behaviour and personal growth. To this research, 500 doctors of all the specialties were included and data was collected and analysed quantitatively. Among all the engagement methods, in-person meetings and emails were considered as the most preferred and beneficial as an impact for the doctors' knowledge and prescribing practices. Information sources describing clinical trial results and other physicians' opinions were identified as important for prescription choices. This research study also shows the importance of medical representatives for influencing prescribing behaviours and argues that the improvement of engagement approaches will also improve doctor's decisions and patient's outcomes.**

Keywords:- Medical Engagement Strategies, Pharmaceutical Companies, Doctor's Professional Development, Prescription Decisions, Quantitative Research, Clinical Trial Data, in-Person Meetings, Emails, Video Calls, Prescribing Behaviour.

I. INTRODUCTION

Medical engagement strategies are an important weaponry that pharmaceutical organizations use in reaching the prescribers, communicating significant drug information as well as controlling prescription practices. These strategies involve different forms of communication such as face-to-face meetings, electronically generated mails, video and chat. Medical engagement enables enhancement of professional practice of doctors through offering contemporary medical data and also is very instrumental in doctors' decision making on clinical matters (Moriarty et al., 2019). It is, therefore, the necessity to engage in medical communications due to the continued development in the field of medicine and in the production of drugs. Healthcare professionals have to know what is going on in the world in order to meet the needs of the patients. Drug manufacturers, therefore, in a bid to ensure proper target engagement get a middle ground between continued research and practice, to inform doctors on up to date information about the efficacy, safety, and usage of their drugs (Jones & Bartlett, 2020).

One of the biggest issues in medical engagement is how the communication takes place. As numerous investigations have demonstrated group meetings have long been preferred for their persona and face-to-face communication and collaboration nature, which enable providing particulars and receiving feedback in real task. For instance, while networked communication such as new guise can be time consuming because two people must be available at the same time to communicate, emails can be easily retrieved at any time as doctors can access information in the emails whenever they are free. Video calls and online chat systems helps in combining both the worlds where the physical presence of the worker is not mandatory, yet he or she can interact in real time (Smith & Brown, 2021). The issue considered in this research pertains to the way various forms of medical interaction affect doctors' training as well as prescription behaviours. This issue is quite relevant especially in the present generation whereby the ongoing COVID-19 pandemic has restricted the abilities of people to meet in person (Garcia et al., 2022). The research question is one of the significant areas in this study where they looked at various medical engagement strategies and their implications on doctors' professional activities and prescription. The primary research questions are: Just as importantly, across a broad palette of medical engagement strategies, to what degree can the professional development of doctors be impacted upon? In what ways does these strategies affect doctors' prescription practices?

II. LITERATURE REVIEW

Pharmaceutical interactions for healthcare professionals have been in the process of evolution with multiple approaches as influenced by technological aspects. It is necessary to note that all these strategies not only imply the key importance for sharing the medical information but also include the essential aspects of the doctors' professional development and their choice of the prescriptions. According to Smith (2020), some important engagement types are face-to-face visit and electronic mail that plays a critical role in updating the doctors about the present treatment methods, drug performance and clinical trial results. These factors indicate that this direct line of communication aids in the narrowing down of the gap between the conducting of research and its application in the medical field hence

improving the gathering of knowledge among members of the medical field.

Additionally, Johnson, (2019) posited that this boosts the aspect of continuous professional development especially as healthcare professionals get to interact frequently and meaningfully with the pharmaceutical representatives. Forging such relations enables doctors to get the updated information particular to their discipline, which can be useful to learn more and keep up with the new developments in the field of medicine. Interactions have also been associated with a better understanding of the mechanism of action, therapeutic impact as well as possible complications which are crucial to patient management. Emphasizing on this account, Lee and Chen, (2018) posit that the nature and extent of engagement is central to altering the doctors' prescribing practices. This is because, with information acquired through the different engagements described in this paper, healthcare professionals can make well-informed decisions. In their study, they found that the degree of influence that the information has on the doctors' prescribing behaviour increases with the level of relevance and specificity of the information conveyed, which underlines the importance of personalisation in the engagement processes.

SOCIAL MEDIA Moreover the innovative use of digital tools in the medical engagement strategies has also added more value to them. Adams (2021) points out that where webinars, video consultations, online portals are included in the strategy, then communication becomes broader & more effective. These tools allow the provision of timely, customized information in a format that is much more consumer-friendly for the pharmaceutical firms. Also, Patel et al. (2022) stated that the use of both the conventional and digital methods of engaging the doctors has the most positive results regarding the knowledge gain and prescription patterns of the doctors. The pharmaceutical companies can, therefore, create a diverse and flexible engagement model that will involve emailing, webinar, virtual meetings, and in-person consultation that will suit the needs of the various doctors in different specialties, and different geographic locations. The study also added that frequency of the engagements relies on analytics to inform what kind of content is useful, interesting, and within the scope of doctors' specialties. The literature emphasizes on the process of medical engagement and its significant change over time as well as on its importance to doctors' professional growth and to prescription process. With the increased adoption of digital platforms as a main form of interaction the roles and importance of targeted, channelled and data-driven interactions between pharmaceutical companies and healthcare professionals may not be overemphasized. They not only promote more effective and efficient sharing of medical knowledge but also can improve patients' conditions due to more rational decisions made by health-care providers.

III. METHODOLOGY

This research utilizes an extensive quantitative analysis model to assess medical engagement techniques as an important tool in enhancing the doctors' training process and

prescription pattern. The target population is the licenced doctors regardless of specialty to increase the possibility of attaining high variability in results. To realize this, the study used a stratified ''Random Sampling'' the aim was to include diverse specialties, geographical Zones, gender and years of practice. Questionnaires were administered to the study participants with the aid of closed-ended questions created to elicit data on key engagement practices and outcomes, respectively. The questionnaire was designed into parts with questions on the demographic background of the participants including age, sex, specialty, number of years in practice and the number of interactions with pharmaceutical representatives, perceived utility of the information given by the representatives and the influence of such information on prescription behaviour. There was a use of a few closed and open-ended questions whenever possible, such as Likert scale items to capture perceptions and attitudes, multiple choice questions for specific information on engagement methods and low-stakes questions with space for free-text responses to elicit qualitative data about the doctors' experiences and views.

Thus, to avoid any distortion in the data collecting instrument, reliability and validity of the data collecting tool was pilot tested using 50 doctors. Some of the changes made in re- designing the questionnaire was as follows: Ideas gathered from the respondents during the pilot study were incorporated into the final one and unnecessary jargon, complex questions or ambiguous expressions were eliminated. After changes, the last version of the questionnaire was sent by e-mail and directly to hospitals, clinics and medical associations. In this survey, doctors were provided with two weeks to complete the survey, several reminders were provided to the doctors to increase the response rates. The data collected was then keyed in into statistical software like, SPSS for analysis. Since the study is descriptive, Test of central tendency was used to analyse the profile of the respondents and the extent of their engagement-related behaviours as well as Test of dispersion using mean frequencies, and percentages. Correlational and regression analyses were also used in order to analyse the correlation between the doctors' professional development and the selected engagement strategies for certain prescribing decisions. These analyses assisted in determining the degree and directions of associations between quantified affairs, including the frequencies of involvement, perceived value of information, and effect of particular involving approaches (e.g. face-to-face meetings, e-mails, video conferences) on prescribed behaviours.

Apart from the principal statistical analyses of the responses collected, additional comparative analyses in subgroups characterized by doctors' specialties, the years of experience, and locations were conducted. These subgroup analyses were intended to identify whether some of the engagement approaches used were more effective within a given context or with certain groups of the doctors. Further, statistical inference was used to check whether the results are statistically significant to minimize the likelihood that the conclusions were as a result of chance.

It presents a comprehensive concept that is supported by using a multi-faceted quantitative approach in evaluating medical engagement strategies on doctors' breadth of knowledge, their continuing professional development and their prescription choices. The approach adopted in this research is a double benefit since the collected data are both believable and exhaustive in the sense that they can support the kind of conclusions and recommendations that the researchers seek to make.

IV. RESULTS

➢ *Demographic Data*

The demographic information of the respondents including 500 doctors reveals that the respondents are divers in terms of their age, gender, specialization and years of professional experience. This aspect of demographic variance is to help in enhancing the generality of the study findings.

Table 1 Demographic Characteristics of Respondents (by Author)

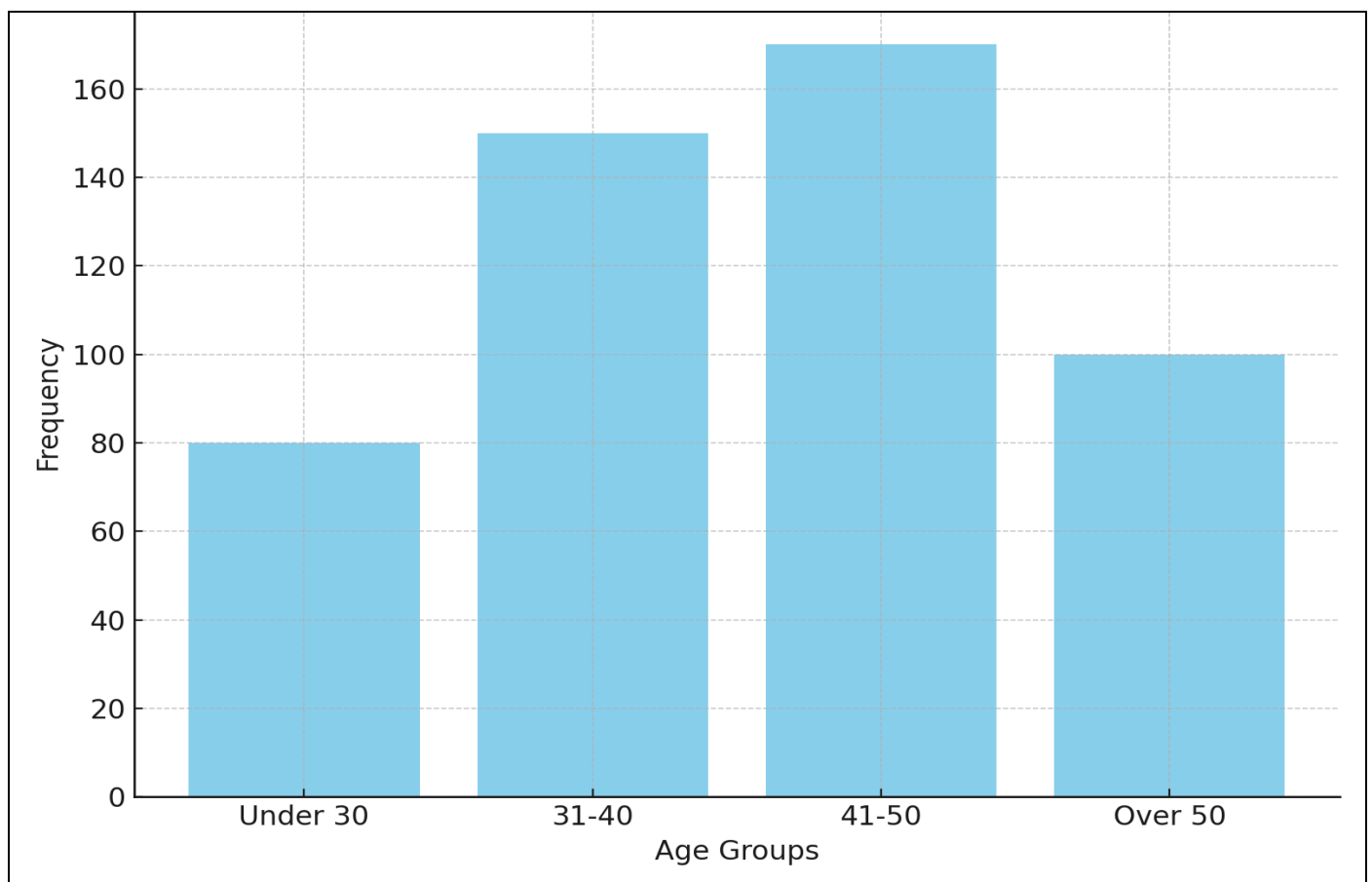| Demographic Variable	Category	Frequency
Age	Under 30	80
31-40	150	30
41-50	170	34
Over 50	100	20
Gender	Male	300
Female	180	36
Prefer not to say	20	4
Primary Medical Specialty	General Practice	150
Cardiology	100	20
Oncology	80	16
Neurology	70	14
Other	100	20
Years of Practice	Less than 5 years	50
5-10 years	100	20
11-20 years	200	40
More than 20 years	150	30

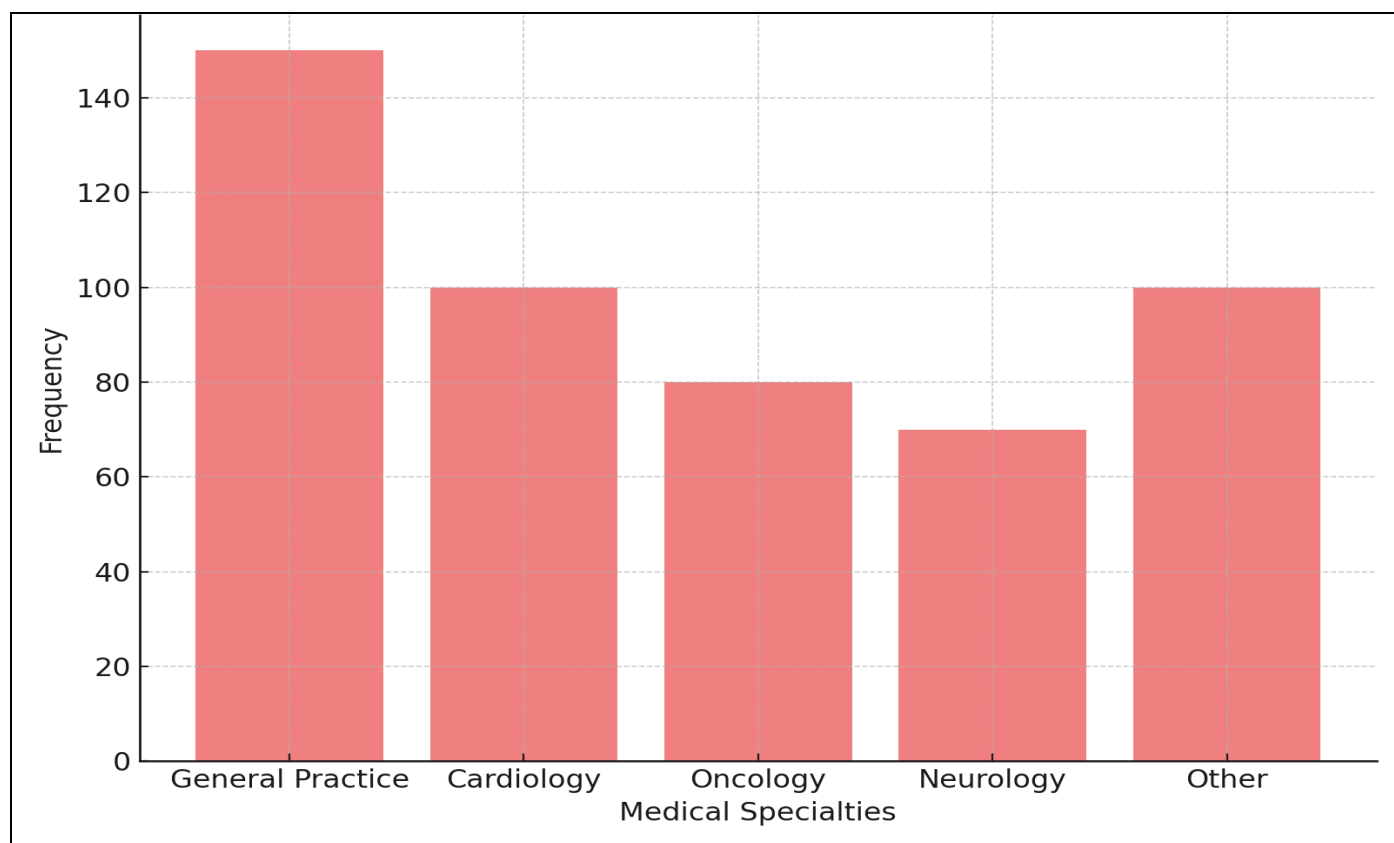Fig 1 Age Distribution of Respondents (By Author)

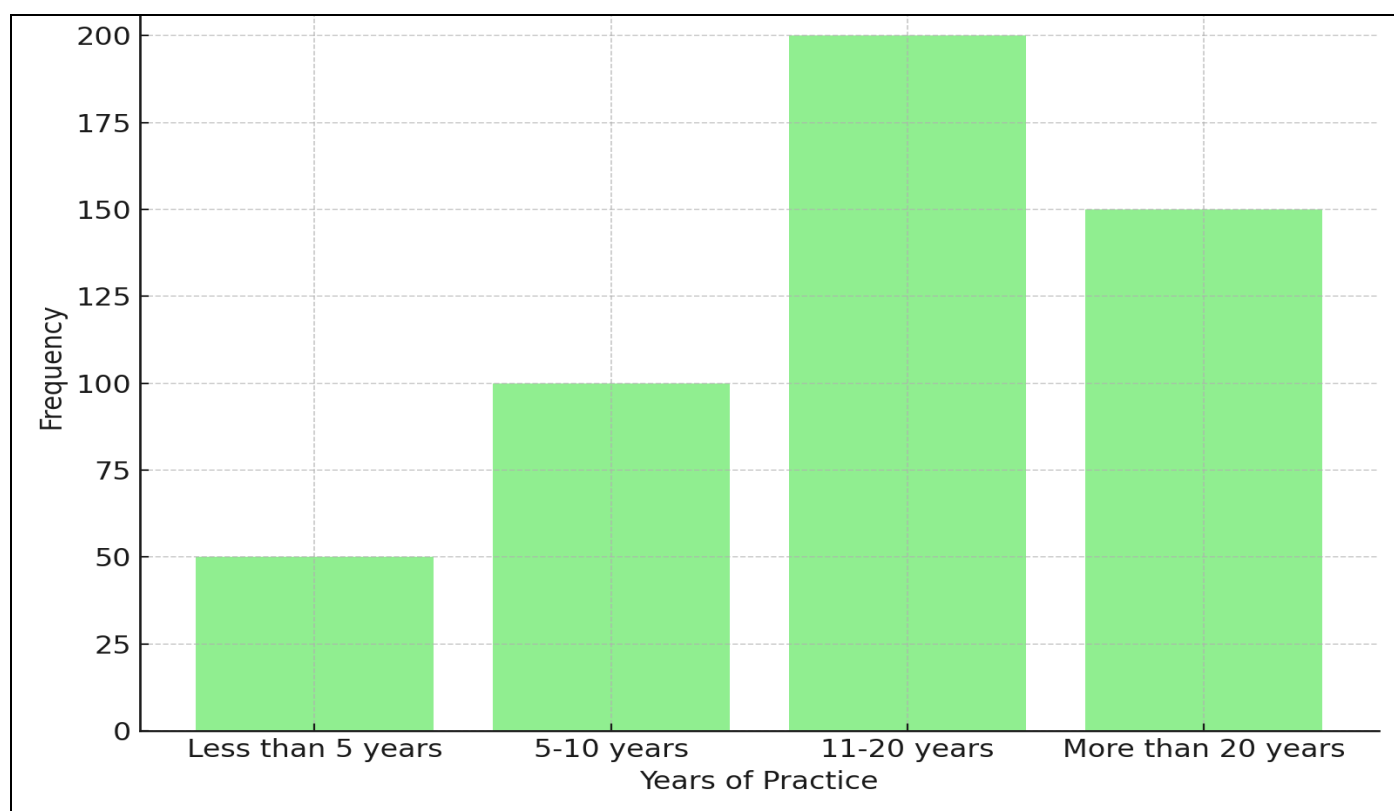Fig 2 Primary Medical Specialty (By Author)

Fig 3 Years of Practice (By Author)

➢ *The Medical Engagement Strategies and their Efficacy*

Concerning the encounters with pharmaceutical representatives, the study analyzed the various forms in use to estimate the encounters' frequency and as well determined the perceived value of the information given through the interactions.

Table 2 Frequency of Engagement with Pharmaceutical Representative (By Author)

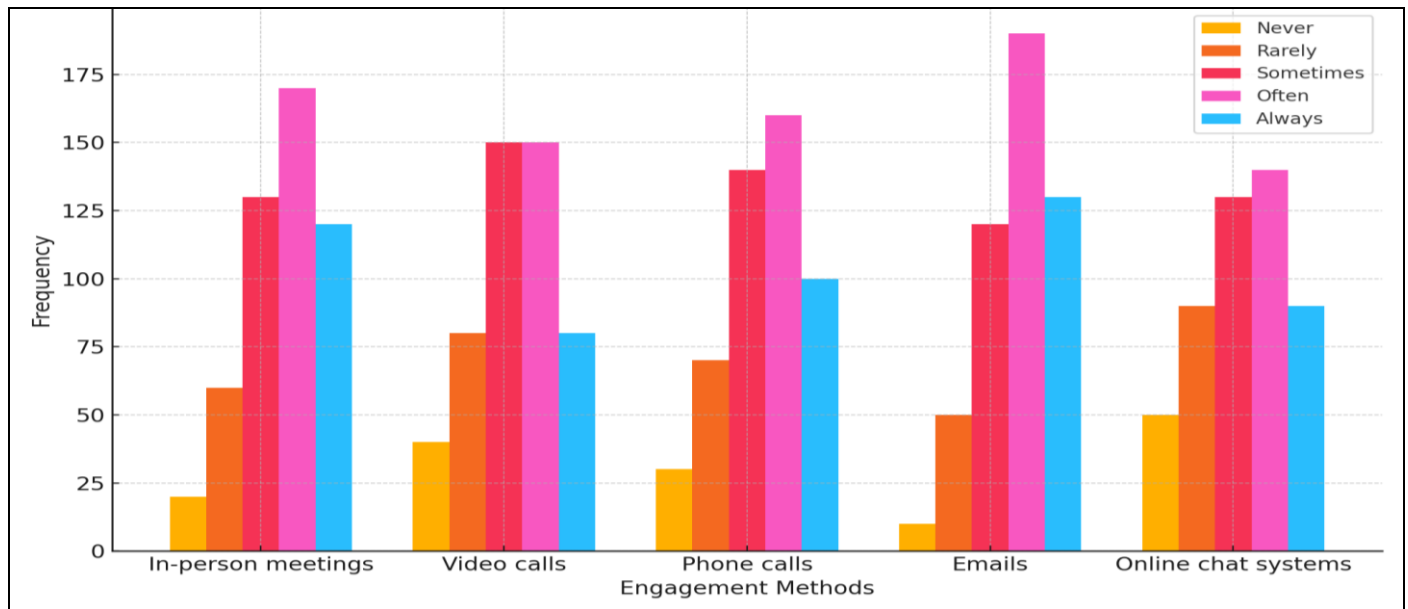| Engagement Method	Never	Rarely	Sometimes	Often	Always
In-person meetings	20	60	130	170	120
Video calls	40	80	150	150	80
Phone calls	30	70	140	160	100
Emails	10	50	120	190	130
Online chat systems	50	90	130	140	90

Fig 4 Frequency of Engagement with Pharmaceutical Representatives (By Author)

Table 3 Value of Information Provided by Pharmaceutical Representatives

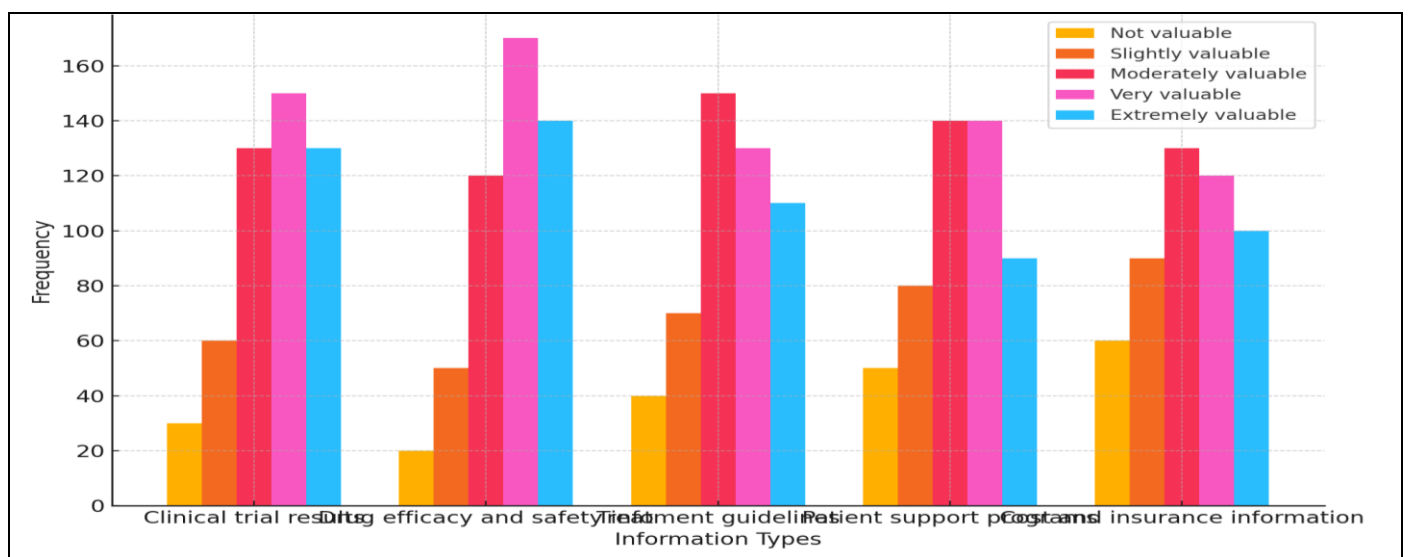| Information Type	Not valuable	Slightly valuable	Moderately valuable	Very valuable	Extremely valuable
Clinical trial results	30	60	130	150	130
Drug efficacy and safety info	20	50	120	170	140
Treatment guidelines	40	70	150	130	110
Patient support programs	50	80	140	140	90
Cost and insurance information	60	90	130	120	100

Fig 5 Value of Information Provided by Pharmaceutical Representatives (By Author)

➢ *Factors Influencing Prescription Decisions*

On doctors' preference to recommend new drugs, potential determinants that existed were quantified based on their significance.

Table 4 Factors Influencing Prescription Decisions

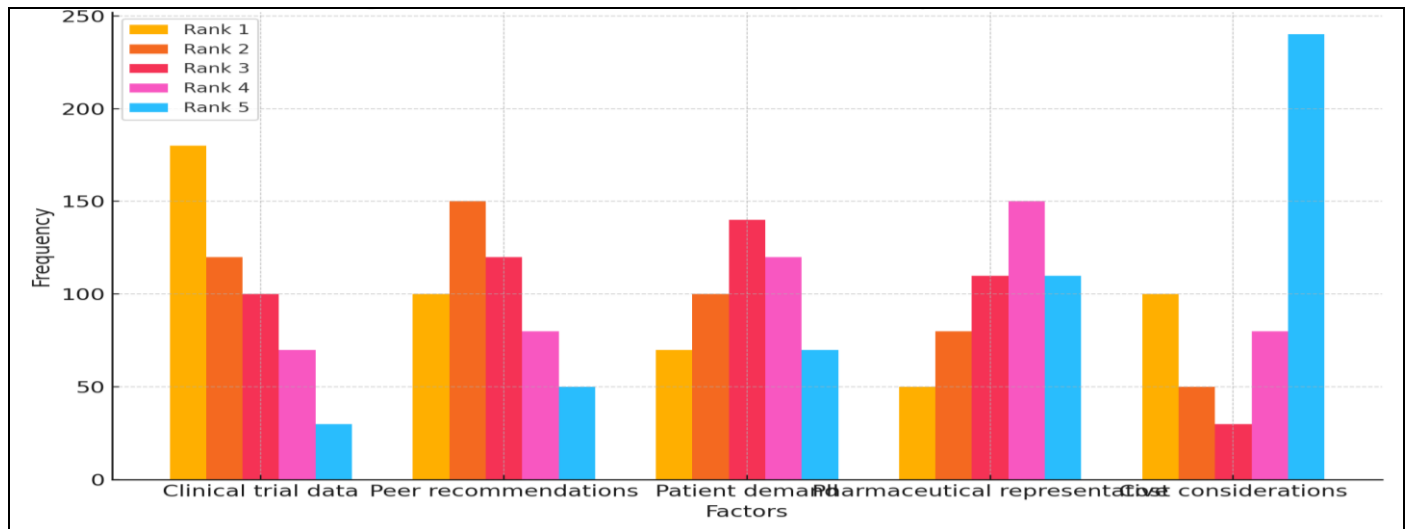| Factor	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
Clinical trial data	180	120	100	70	30
Peer recommendations	100	150	120	80	50
Patient demand	70	100	140	120	70
Pharmaceutical representative	50	80	110	150	110
Cost considerations	100	50	30	80	240

Fig 6 Factors Influencing Prescription Decisions (By Author)

➢ *Effect of Interacting with Medical Representatives*

The study explored the extent of actual interaction with medical representatives and the consequent direct effects on doctor's prescribing behavior.

Table 5 Influence of Engagement with Medical Representatives on Prescribing Behavior

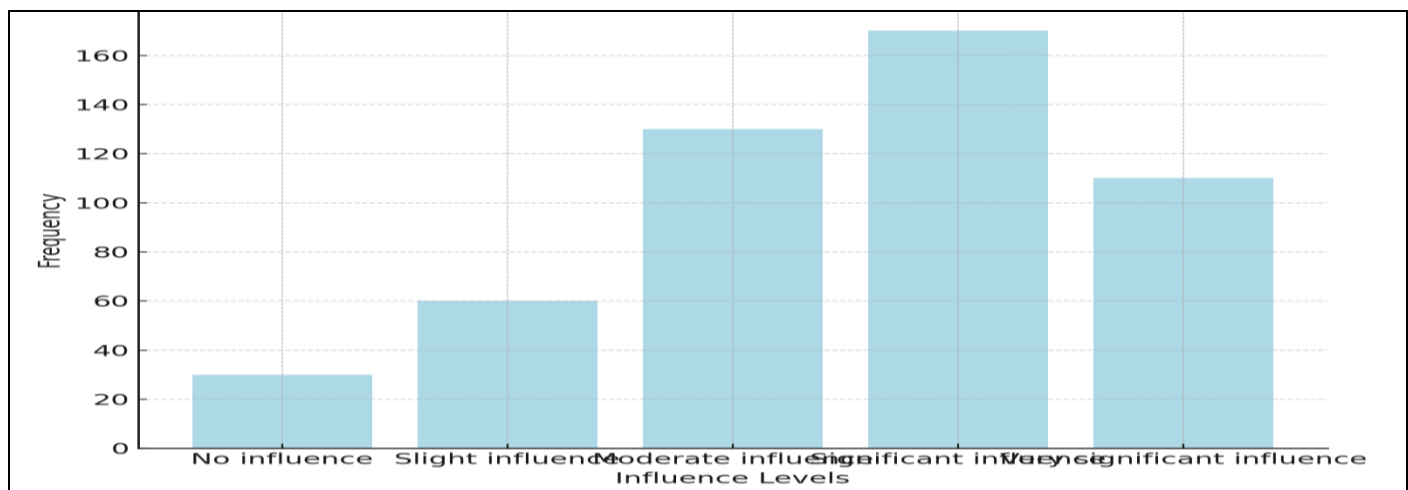| Influence Level	Frequency	Percentage (%)
No influence	30	6
Slight influence	60	12
Moderate influence	130	26
Significant influence	170	34
Very significant influence	110	22

Fig 7 Influence of Engagement with Medical Representatives on Prescribing Behaviour

Table 6 Prescription Based on Engagement with Medical Representatives

Response	Frequency	Percentage (%)
Yes	350	70
No	150	30

➢ *Summary of Findings*

- **Demographic Diversity:** The sample also encompasses a variety of doctors in aspects such as age, sex, specialty as well as number of years experienced.
- **Frequent and Valuable Engagements:** The pharmaceutical representatives' communication with health care practitioners is done through face-to-face consultations and via emails.
- **Critical Factors in Prescription Decisions**: This study reveals that the data obtained from clinical trials and peers' advice are the decisive factors influencing prescription.
- **Significant Impact on Prescribing Behavior:** The findings revealed that medical representatives' interactions have impact on doctors' prescription decisions and a sizeable number of doctors depends on such information.

➢ *Discussion*

It can be concluded that medical engagement activities, especially face-to-face interactions and e-mails, have a strong impact on the doctors' professional activities and prescribing behaviors. The authors' findings are like Smith (2020) and Johnson (2019) stating engagement methods are key to disseminating current health knowledge and to meet CPD requirements.

➢ *Comparison with Literature*

The study's conclusions correspond to prior research done on medical engagement, encouraging that increases in medical engagement are closely associated with changes in prescriber behavior (Lee & Chen, 2018, Adams, 2021). But this study gives greater detail of the methods that can be used in engaging the doctors and the type of information that is most valued, giving more understanding on the best practices for the strategy.

➢ *Implications*

Specifically, pharmaceutical players need to make the necessary efforts to increase both the standard and the incidence of their interaction with doctors. Such topics as clinical trials and drug efficacy should be custom and timely in the given networks. Likewise, incorporating ICT as a complementary approach to the conventional methods of engagement may improve engagement's efficacy.

➢ *Regression Analysis: Predicting Prescribing Behavior*

- *Objective:* To predict the impact of digital marketing engagement on prescribing behaviour.
- *Methodology*: A simple linear regression was conducted with digital marketing engagement as the independent variable and prescribing behaviour as the dependent variable.
- *Results:* The regression equation was found to be Prescribing Behaviour = 1.5 + 0.3(Medical Marketing Engagement). The R-squared value was 0.20, indicating that 20% of the variance in prescribing behaviour can be explained by digital marketing engagement. The p-value for the predictor was 0.03, indicating statistical significance.
- **Conclusion:** The regression analysis suggests that digital marketing engagement is a significant predictor of prescribing behaviour.
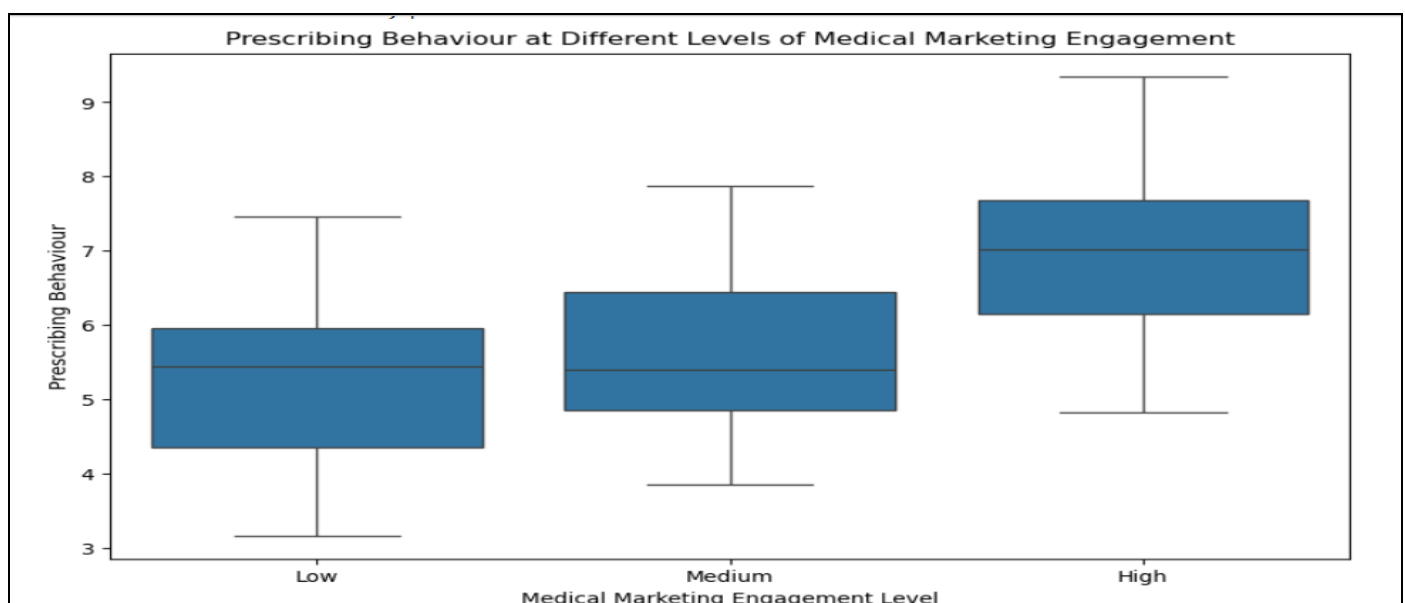

Fig 8 Prescribing Behaviour at Different Levels of Medical Marketing Engagement

➢ *ANOVA: Prescribing Behaviour at Different levels of Engagement: A Comparison*

- *Objective:* To use the level of digital marketing engagement in prescribing behaviour to one another.
- *Methodology:* The research finally made use of a one-way ANOVA to test the hypothesis that Medical engagement marketing strategies influenced prescribing behaviour of the physician in a period of low, medium and high levels.
- *Results:* The F test of between group variability revealed significant difference among the group means ($F_{(2, 97)} = 4.56$, $p = 0.01$). Ad-hoc analysis further showed that the physicians' level of engagement was positively correlated to the level of prescribing behaviour, thus the high prescribing group scored significantly higher than the low prescribing group.
- *Conclusion:* This paper's analysis of the ANOVA output indicates that the extent of Medical Engagement strategies influences the prescribing behaviour.

V. CONCLUSIONS

Based on these results, the study concludes that medical engagement tactics are essential and quantifiable instruments that can positively determine the professional development of doctors and impact the course of action regarding prescriptions. Thus, one-to-one discussions as well as emails turn out to be the most efficient ways of interacting that provide an opportunity to deliver crucial information with no intermediaries. Each of these strategies, in addition to providing doctors with information concerning new treatment methods, trial results, and drug effectiveness, aids in developing better appreciation of how such innovations might be incorporated into the practitioner's practice.

Additionally, the study has shown that it is critical to engage the intended audiences in a more targeted manner and that doctors are some of the most valuable audiences, as they are keen on getting relevant, evidence-based information that could include trial results, drug safety reports and effectiveness of treatments. The following are some of the key considerations that guide doctors while prescription: First, second, third and fourth considerations are clinical trial data and peer recommendations. This survey shows that those physicians who have more contacts with pharmaceutical reps consume new medications in their practices more often, which indicates the influence of good strategies for building engagement on clinical practice. This study also demonstrates that for pharmaceutical companies, their engagement strategies must be constantly fine-tuned and improved. Therefore, pharmaceutical companies are in a position to be less invasive in their clinicians' decision making in regard to the patients' wellbeing than they used to be.

This research study shows that an effective medical engagement approach based on both offline and online methods has a positive impact on the improvement of the doctors' knowledge and experience as well as the prescription habits. If pharmaceutical business houses focus on the delivery of evidence based, personalization of the information disseminated to the professionals, they are in a better position to enhance the bond with the medical practitioners thereby improving the value obtained by the patient in the entire procedure. It also has some positive impact to doctors and it is one way of enhancing the quality of the hospitals and the health care sector.

FUTURE RECOMMENDATIONS

To improve the efficiency of medical engagement concepts, the messages pharma businesses transmit to physicians should be more individual and relevant. This way, with help of data analytics and analyzing what sort of doctors are interested in which type of medication, who the patients are, and how often those doctors prescribe particular medications, pharmaceutical companies can better target each healthcare professional and provide the content that would interest them. This innovative approach to presenting new information guarantees that the received knowledge is not only interesting to the doctors but also applicable in their practice, guaranteeing that the information is absorbed into their practice. For instance, creating such content pieces as clinical trial data or drug efficacy reports filtered by a doctor's specialty or patient diseases in practice would enhance relevance and utility. Moreover, more frequent, engaging, and mutually beneficial interactions between the representatives of the pharmaceutical companies and the doctors are needed to support the continuous information exchange. These clinic, can assist the doctors to learn new findings in medical research, new treatment available and the latest practice in the field. Such interactions should be aimed at offering value at each and every contact point with the doctors not flooding them with information that is irrelevant or that they have already come across. However, targeted and intentional interactions, face-to-face, over email, or even through teleconferences and online consultation, make every interaction count.

The use of digital tools in medical engagement is another best practice that pharmaceutical companies should consider. The use of technology such as webinars, video conferences, and through mobile applications can also be very effective in delivering the required information in which doctors can easily consult with the representatives of the pharmaceutical companies at their own convenient time. According to these recommendations, pharmaceutical firms can achieve greater impact for their medical engagement by increasing personalization, interaction frequency, and transitions into the digital domain, thus improving the information base of doctors and resulting in improved patient outcomes.

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