

Summer Training Report

By

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"Learning the art of expressing gratitude will force you to focus on the positive."

Nikunj Parwal

(Roll No. 0194)

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Doctor's Perception towards future of Pharma Marketing, Role of Digital Application & Artificial Intelligence in Pharma.

ABSTRACT

The pharmaceutical industry is competently characterized as a “life-line industry.” It plays an important role in reducing the pain of people globally and managing numerous illnesses that affect living individuals. However doctors hold an important number of fundamental positions in the pharmaceutical industry, practicing physicians are commonly not aware of the lifeworks in this industry, or of the organogram of a pharmaceutical company, many physicians have not had much introduction to pharma during their clinical practice. Therefore to strengthen the synergy between medicines and academia and also to enlighten doctors considering a career in the pharma industry, it is very important for the pharma companies to enhance doctors knowledge about the operation within pharmaceutical companies. Pharmaceutical companies work in a balanced environment which poses limitations in the nature of promotional and marketing activities they can pursue. These promotional activities consist of Below – the-Line (BTL) activities with a goal to grab their customer segment – the healthcare professionals with a constructive brand experience. So to engage the attention, build exclusive brand association and achieve brand equity with the healthcare professionals, the pharma companies present globally are experimenting with the digital medium. As the Artificial Intelligence is developing, the practice of medication is changing. The reliability and efficacy of prognosis and therapy over diverse specialty are already enhancing with the help of AI- based systems combined with quick enhancement in computer processing. This resulted in looking into whether systems which are based on AI will ultimately takeover doctors of respective specialty or will supplement the functions of doctors without replacing them. This research seeks to evaluate the impact on doctors to further figure out the technology and assess effect of the technology over the medicine. The motive of the research is to understand and assess the perception of physicians towards the pharma market and to know about the acceptability and effectiveness of digitalization and Artificial Intelligence in the Pharmaceutical industry.

Keywords

Doctors perception, pharmaceutical industry, pharma market, digital application, artificial intelligence

1. INTRODUCTION

The pharmaceutical industry is competently characterized as a “life-line industry.” It plays an important role in reducing the pain of people globally and managing numerous illnesses that affect living individuals. (Bora, 2014). The pharmaceutical industry has recorded tremendous achievements in the health sector and contributed to the economic development of many countries (Ahmed, 2014). India possesses a significant status in the pharma domain worldwide. The pharmaceutical market in India holds third position with respect to volume and thirteenth position with respect to value. Universally, India is one of the massive suppliers of generic drugs (Dhanalakshmi, GROWTH OF INDIAN PHARMACEUTICAL INDUSTRY: An overview , 2017). There is a distinctive interconnection between the pharmaceutical industry, the medicos and the patient. The pharmaceutical industry manufactures the produce which it cannot sell to the patient directly. Contrarily, the physician can't cure the patient unaccompanied by the medicines manufactured by the pharma industry. Therefore, the physicians and the industry are associated with a common goal (Ravindran, The physician and the pharmaceutical industry , 1999). The foremost responsibility of the doctors is to take care of the health of the person who is ill (patients) and the society. Whereas, the industry manages to help us attain the purpose (Rai, THE PHYSICIAN AND THE PHARMACEUTICAL INDUSTRY , 2001). Interactions between doctors and pharmaceutical industry have been increased significantly in over the last several years and it becomes such common activities (Mandal, 2012). India has observed a paradigm shift in the organizational behavior of different industries over the last years. With an increase in the digital engagement, maximum industries have configured their businesses online including a few pharmaceutical companies, while many other pharma companies are still trying to organize their online marketing strategy (Docplexus, 2015). “Digital” became an essential part of daily life. All the sectors were going to adapt more quickly to the digital world. The pharmaceutical industry, but except for the website has not been able to implement digital marketing entirely. There are many problems facing the pharma business when it comes to marketing. In this generation more pharmaceutical companies are using social media sites or ecommerce sites as a medium for digital marketing. That allows the customers to purchase products online. Several companies are trying to understand digital's true value whilst others are incorporating it into the wider marketing strategy

(Bharskar, 2020). A research of top 20 drugs manufacturers in India have found that a digital flow is sailing across the Indian pharmaceutical industry which is worth \$17 billion and companies are shifting from the conventional ways of marketing to newer technologies ranging from e-detailing to physicians to utilizing newer algorithms for effective understanding into situations like patient compliance (Raghavan, Indian pharma sector going digital at a fast pace , 2016). Many physicians have started to follow digital application in their clinical practice. Physicians have started becoming more proficient towards internet and follow the latest updates in the medico field and on the basis of these advances they have started modifying their patient's treatment plans (moPharma, Digital Age – A Boon for Pharma Digital Marketing in India, 2020 , 2020). John McCarthy first coined the term “Artificial Intelligence” for a conference organized at Dartmouth in 1956. Artificial intelligence (AI) is a predominant topic in the field of computer science that attempts to build sophisticated machinery coupled with characteristics of human intellect (Ahuja, 2019). In Pharma, the use of automated algorithms to execute tasks which generally depends on human intelligence is referred as Artificial Intelligence. In recent years, the utilization of A.I. in pharma as well as biotechnology industry has reshaped how experts develop new drugs, deal with diseases, and many more (Arsene, Artificial Intelligence & Pharma: What's Next?, 2020). Artificial Intelligence can optimize the pharma business by its capability to boost R&D, from discovering and formulating novel molecules to drug validation. It can also help in reducing the time taken for a drug trial and approval, so that the drug can be introduced into the market as soon as possible which ultimately results in cost-effectiveness, several treatment options and more nominal therapies (Tierney, Artificial intelligence in pharma: utilising a valuable resource, 2020). Artificial Intelligence can be adapted in the healthcare industry by different ways like directing routine tasks, managing various facts and figures and data, creating medical related consultation process digital, utilizing the convenience of digital nurses, handling medications etc. From making process of healthcare automated to assistance in discovery of drug, Artificial Intelligence plays a significant role and will surely create a revolution in this pharmaceutical industry (Sinhasane, Artificial Intelligence in the Pharmaceutical Industry – An Overview of Innovations , 2019).

2. LITERATURE REVIEW

Relationship between doctors and pharma industry are usually recorded and discussed in the medical journals and literatures. A recent research unveiled that around 94% of doctors have some sort of association with the pharma industry (R, Who pays for the pizza? Redefining the relationships between doctors and drug companies. 1: entanglement., May 2003). The effects of the interaction between doctors and the pharmaceutical industry have been evaluated and as a result it shows the impact on prescribing manner, behavior and attitude of doctors towards pharmaceutical industry and vice-versa (A, January 2019). The position of the healthcare and connected health is continuously changing due to the digital age and provides several advantages such as providing an effective care experience, enhancing health outcomes and lowering per capita (Iglehart, Connected Health: Emerging Disruptive Technologies, Health , 2014). Nowadays most of the population can easily collect information on health related matters by social networking sites, online details from different sources and blogs and websites in this technological and digital era. So, it becomes important for the pharmaceutical industries to publish accurate and reliable details regarding the drugs and the disease conditions online because it is the only way to get to know about the medicines usage, their indication and contraindication. Hence it is very crucial for the pharmaceutical sector to balance the pace with the digital wave (R.Nalini, Alamelu, Amudha, Badrinath, & GaneshKumar, E-detailing –Empowering doctors in Digital Era., 2017). The pharmaceutical sector is encountering a set of wide ranging variation such as increased competitions, expirations of patent and increased pricing pressures. Digital transformation is shaping the industry as digital services beyond the product itself are being integrated into the range of offering. (Landwehr, Digital Transformation in the Pharmaceutical Industry - From Products to Services ‘Beyond the Pill’ , Novemeber 2015). Digital engagement and digitalization has become an important part of life. Due to ease of interaction with the customers, less time consumption and cost effectiveness, digital marketing is successfully replacing the conventional marketing strategies in the pharmaceutical sector. Adding on digitalization has also created interest among the doctors in using various social media and digital tools (Jawaid & Ahmed, Pharmaceutical Digital Marketing and Its Impact on Healthcare Physicians of Pakistan: A National Survey, June 2018). Digital marketing is the developmental stage in Indian pharmaceutical industry. Pharmaceutical companies are using services based on technology, providing more information to patients related to their disease conditions and

keeping them regularly updated about their wellbeing. It may be useful to give the physicians a deep understanding about the wellbeing of the patient and if any side effects about the products. Using these digital tools it becomes simpler for the physicians to communicate with their patients with ease on certain health conditions (Bharskar & Siddheshwar, DIGITAL MARKETING IN PHARMACEUTICAL SECTOR, January 2020). It also shows an impact on the interaction between physicians, patients and the pharmaceutical organizations (Thackeray, Neiger, Hanson, & Mckenzie, Enhancing promotional strategies within social marketing programs: use of Web 2.0 social media., October 2008). The business models of the Pharmaceutical sector will be transformed by Digital Health. However most of the industries have not yet designed a plan to initiate Digital Health, senior business leaders are expecting that by 2020-21, Digital health apps and tools will help the pharma industries to form new business division which would ultimately enhance their competitive advantage (Görlitz, Impact of Digital Health on the Pharmaceutical Industry, January 2013). As the Artificial Intelligence is developing, the practice of medication is changing. The reliability and efficacy of prognosis and therapy over diverse specialty are already enhancing with the help of AI- based systems combined with quick enhancement in computer processing. This resulted in looking into whether systems which are based on AI will ultimately takeover doctors of respective specialty or will supplement the functions of doctors without replacing them (Ahuja A. S., The impact of artificial intelligence in medicine on the future role of the physician, October 2019). Due to advancement in the computer technologies, learning data design and algorithms and presence of big data derived from medical records and health wearable, Artificial intelligence is ready to play a significant role in the pharmaceutical and healthcare sectors. For Artificial Intelligence, the health care sector is rapidly increasing at a rate of 40 percent as per the future prediction it is expected to mount till 6.6 billion dollars by 2021 (Frost & Sullivan, 2016). AI is expected to have an important impact in chronic disease management and clinical decision making (Bresnick, 2016). AI is yet in its early stage of being accepted, but it shows positive feedback in varied specialties like cardiology, radiology and pathology (Hseih, 2017). Novel concerns emerge from the significance of AI in the health sector such as data liability, privacy concerns (Prince & Cohen, 2019) and concerns related to the online security, responsibility and concerns about the incorporation of tools related to AI within the recent practice and ethics consideration (Lamanna & Byrne, 2018).

3. RESEARCH OBJECTIVE :

1. Perception of doctors towards future of pharma marketing.
2. Doctors perception towards role of digital application in pharma
3. Doctors frame of mind towards Artificial Intelligence

4. RESEARCH METHODOLOGY :

Type of Research : Descriptive study

Data collection : For the survey online google form was generated with multiple choice questions . Primary data was collected from the doctors throughout the PAN India . secondary data was collected from PubMed Articles , Published journals , etc

Durations: 3 months (22/04/2020 – 30-07-2020)

Sample Size : 50 Doctors

Data Analysis : The data analysis had been done by using MS Excel

Study Area : PAN India

Data Collection Method:

Primary Data Collection : A pretested structured questionnaire was framed for data collection

Secondary Data Collection : Journals , PubMed Articles

Data Collection and Analysis :

The responses obtained was collected , filtered , and statistically analysed using Microsoft Excel .

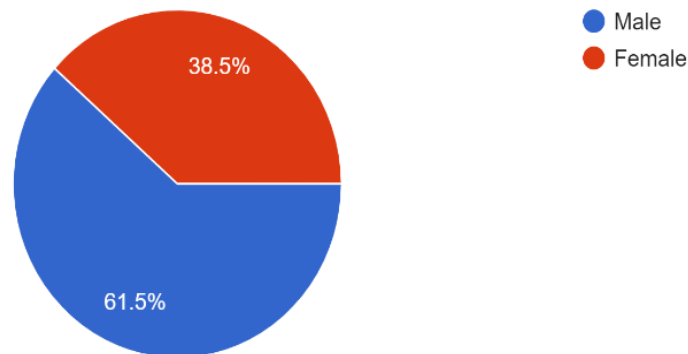
Measure of Ethics : Respondents were assured of Privacy and Confidentiality.

Data Analysis and Interpretation:

Analysis and interpretation of the data has been carried out to deduce the conclusions with the aid of appropriate statistical tools.

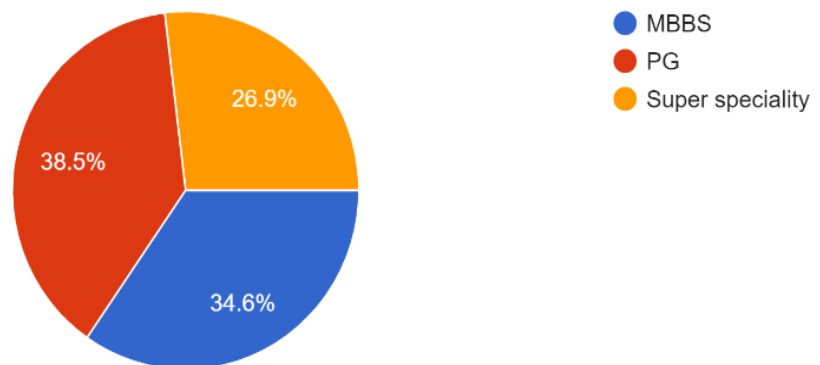
5. DATA INTERPRETATION AND ANALYSIS :

1. Gender



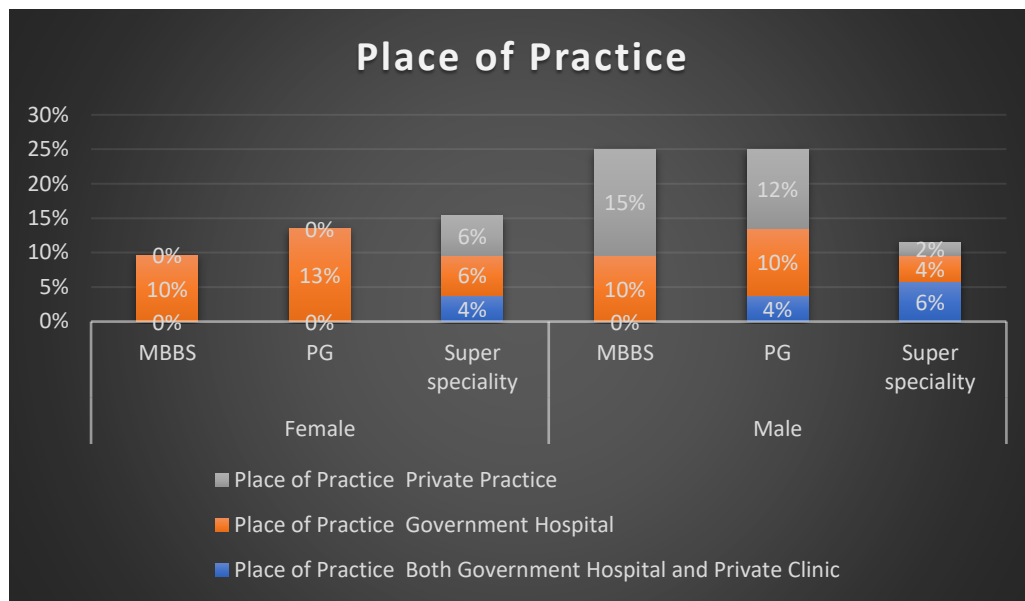
Analysis : This Piechart shows that out of 50 Doctors 61.5% are Male and 38.5% are female . by this we can state that Male Doctors found this study more helpful as compared to female Doctors and also male Doctors are more interested in giving responses as compared to Female Doctors .

2. Qualification :



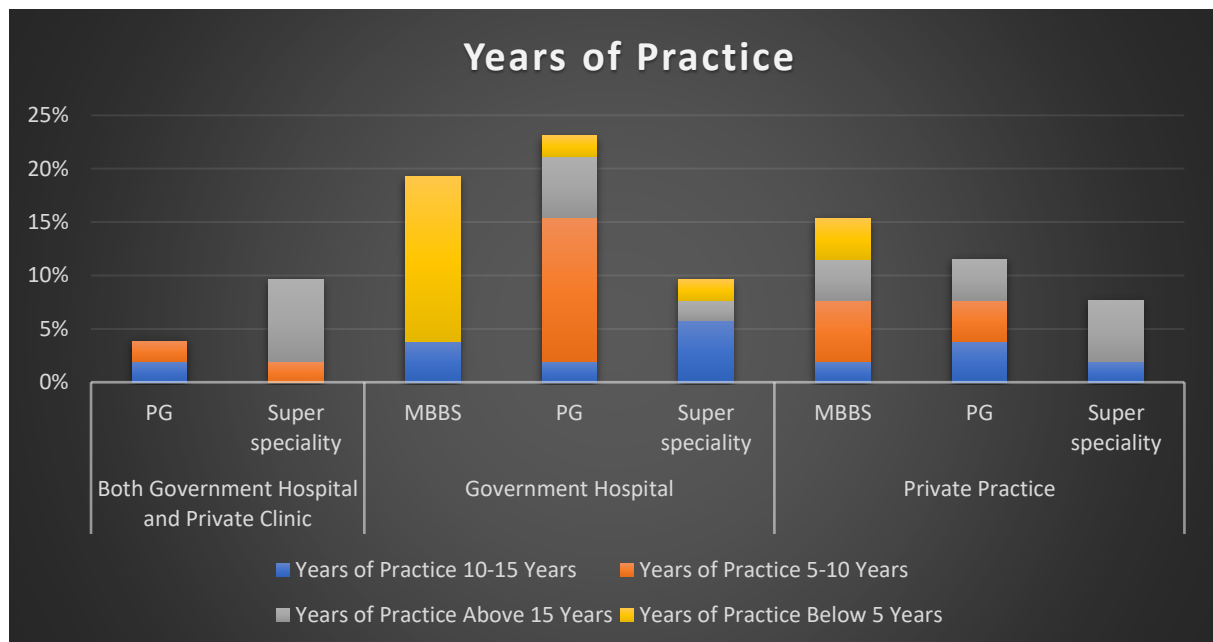
Analysis: This graph shows the qualification of the doctors where, 38.5% of doctors were PG , 34.6% were MBBS and 26.9% were super speciality Doctors .

3. Place of Practice :



Analysis : This graph shows the correlation between qualification and gender , where 15% of Male MBBS Doctors are in Private Practice & 10% of the female MBBS Doctors are in Government practice .

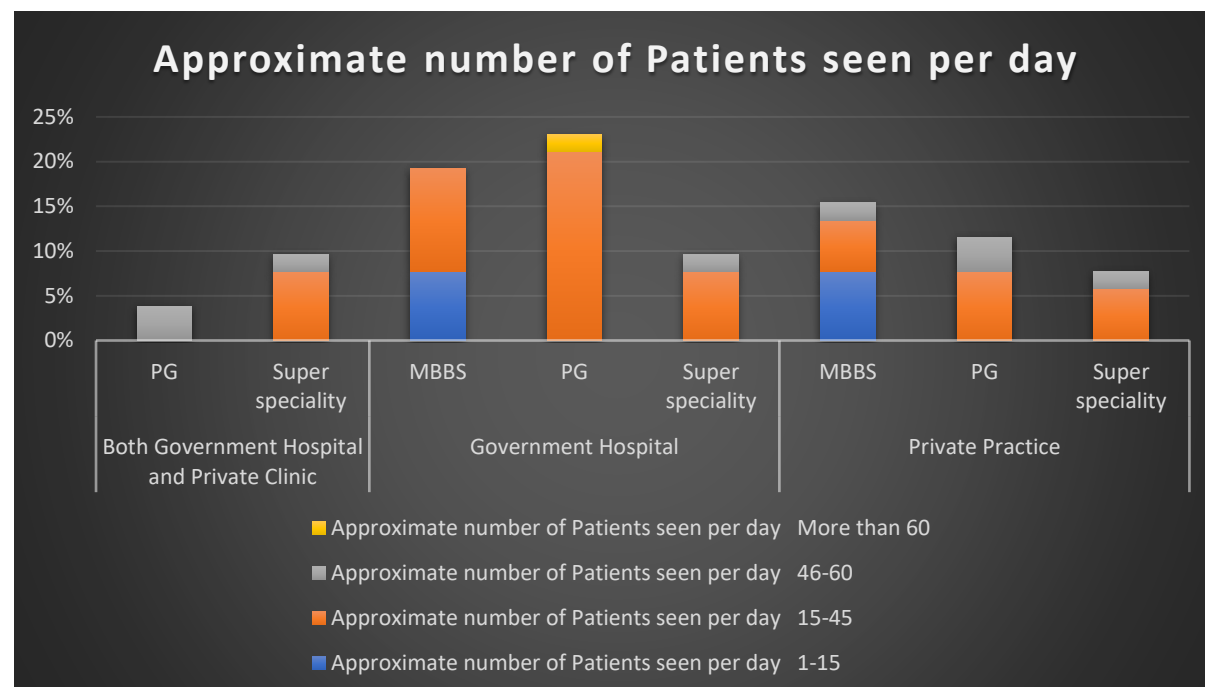
4. Year of Practice :



Analysis : This graph shows the relation between qualification and place of practice with years of practice , where MBBS doctors are 15% who practice in government hospitals and they have experience of below 5 years whereas , super speciality doctors who practice in private clinics are only 2% who have more that 10 years of experience , this also shows

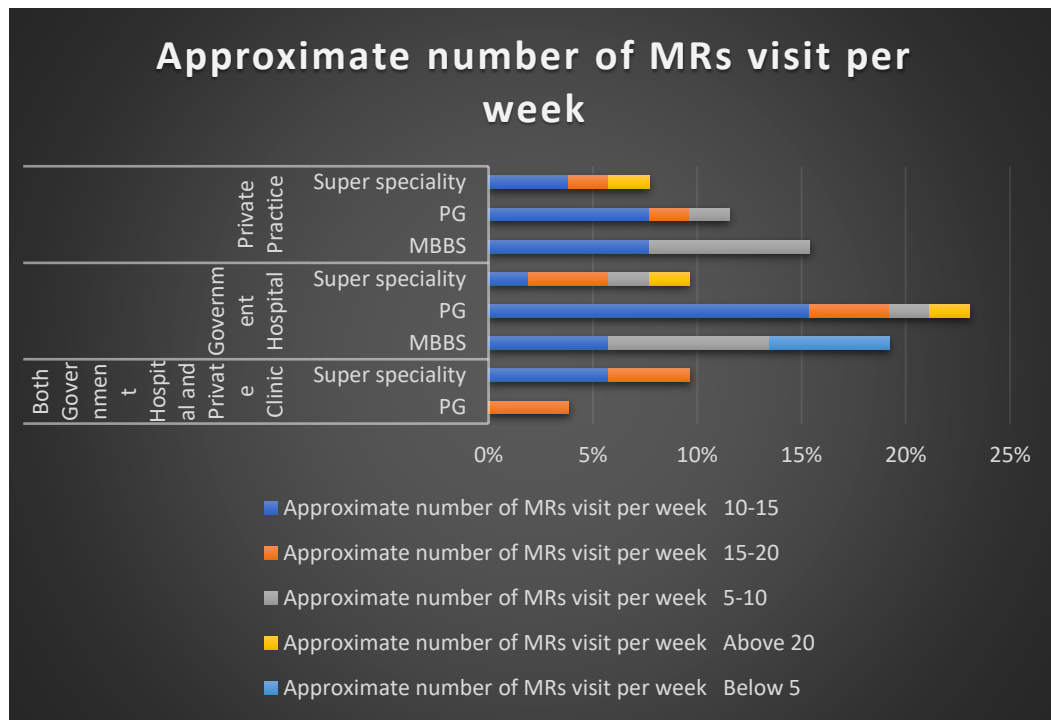
that there are less number of doctors who have more that 10 years of experience and MBBS Doctors are more as compared to PG and super speciality doctors .

5. Approximate number of patients seen per day :



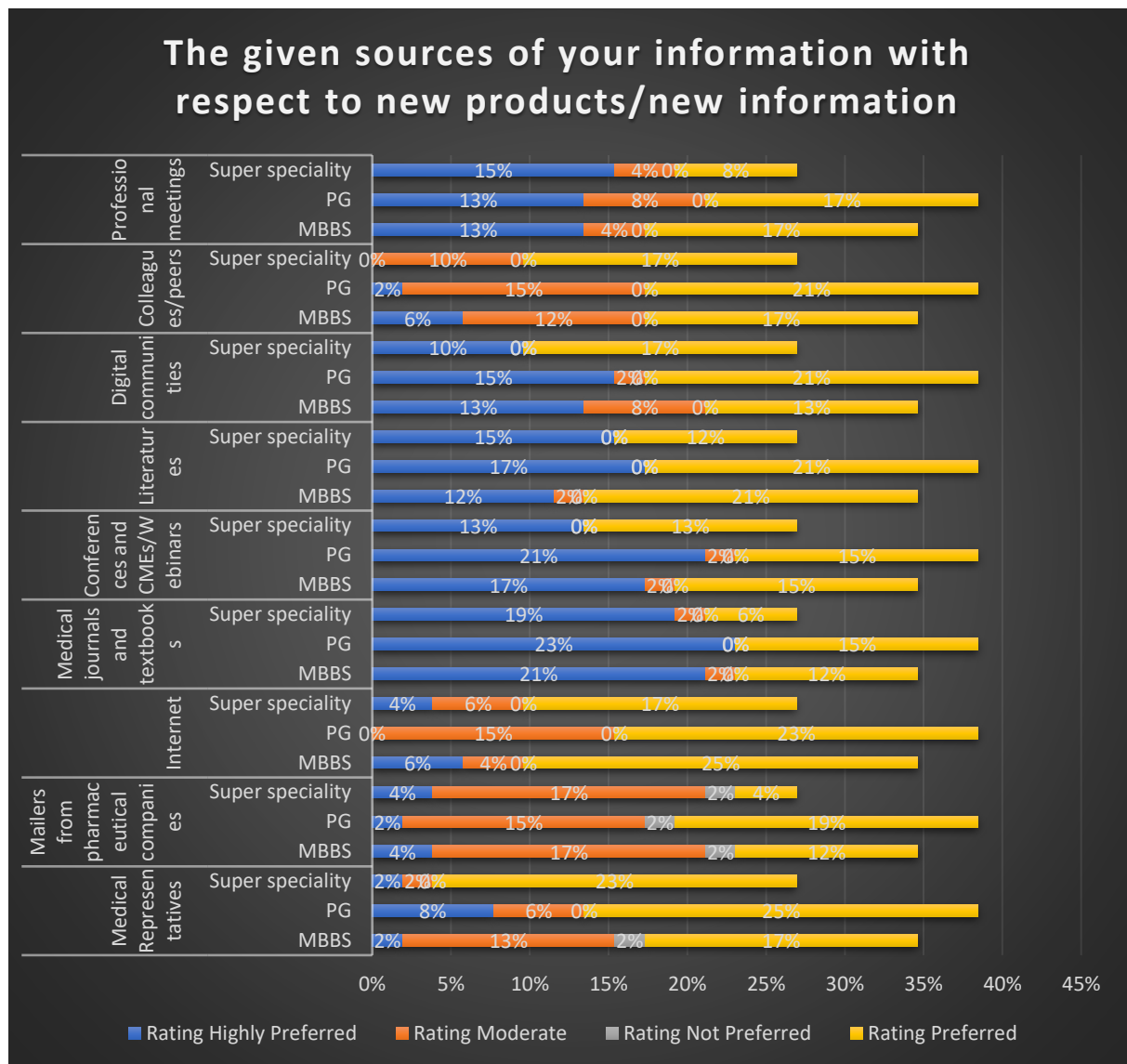
Analysis : This graph shows the Correlation between qualification & place of practice vs the number of patients seen per day so here, 21% of patients are seen per day by PG doctors who practice in government hospitals whereas, 8% of patients are seen by MBBS Doctors who practice in government hospitals.

6. Approximate number of MRs Visit per week :



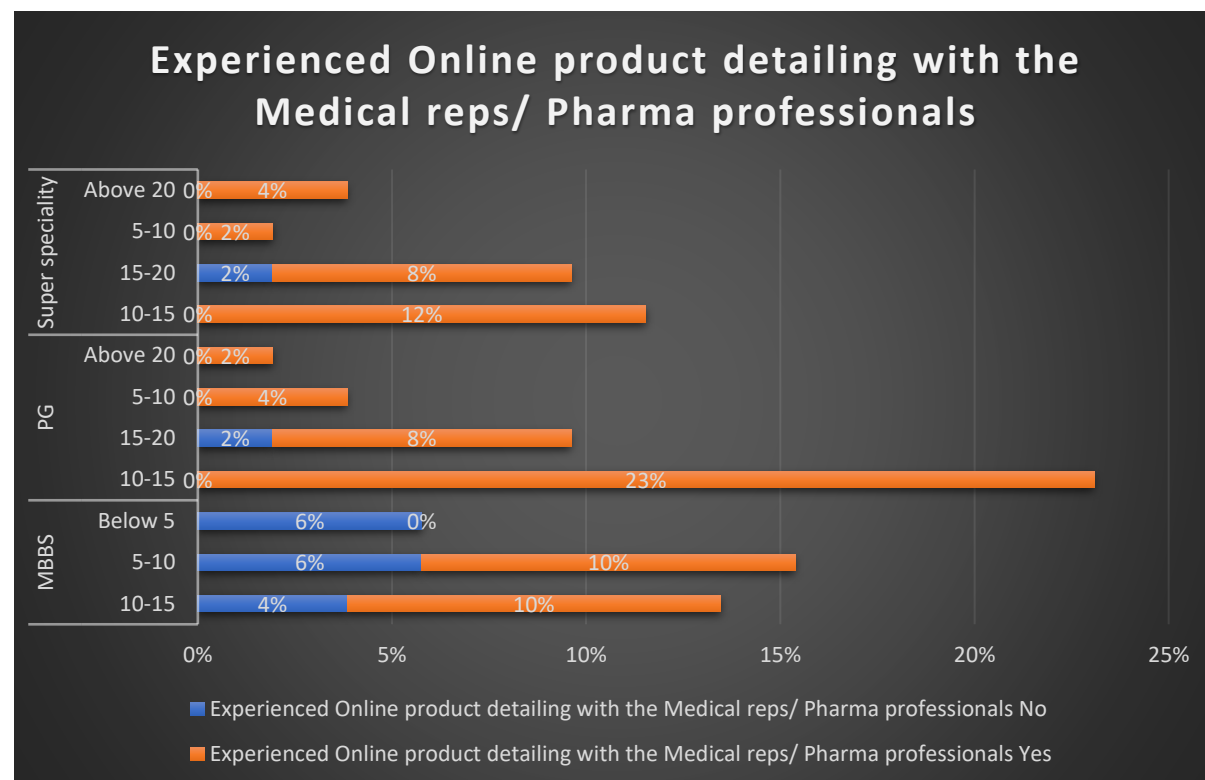
Analysis : This graph shows the Correlation between qualification & place of practice vs the number of MRs visit per week so here, 15% MRs visit to PG doctors who practice in government hospitals , whereas only 2% MRs visit to super speciality doctors who work in private practice .

7. Please rate the given sources of your information on a esp..w.r.t. new products /new information five point scale :



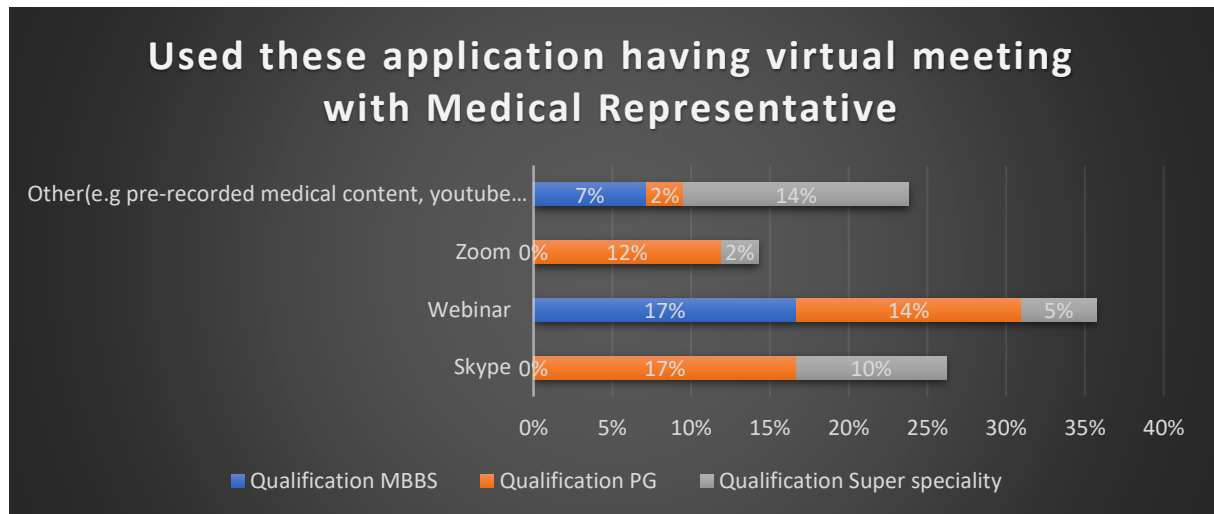
Analysis : The above graph shows the analysis between physician qualification with their preferences way to sources to new product / new information . for example in the above graph , it shows that the mode of digital communities is highly preferred bt PG (15%) followed by MBBS (13%) and speciality (10%) similarly , medical journals and textbooks are highly preferred by PG(23%) followd by MBBS (21%) and speciality (19%)

8.A) Have you experienced Online product detailing with the Medical reps/Pharma professionals?



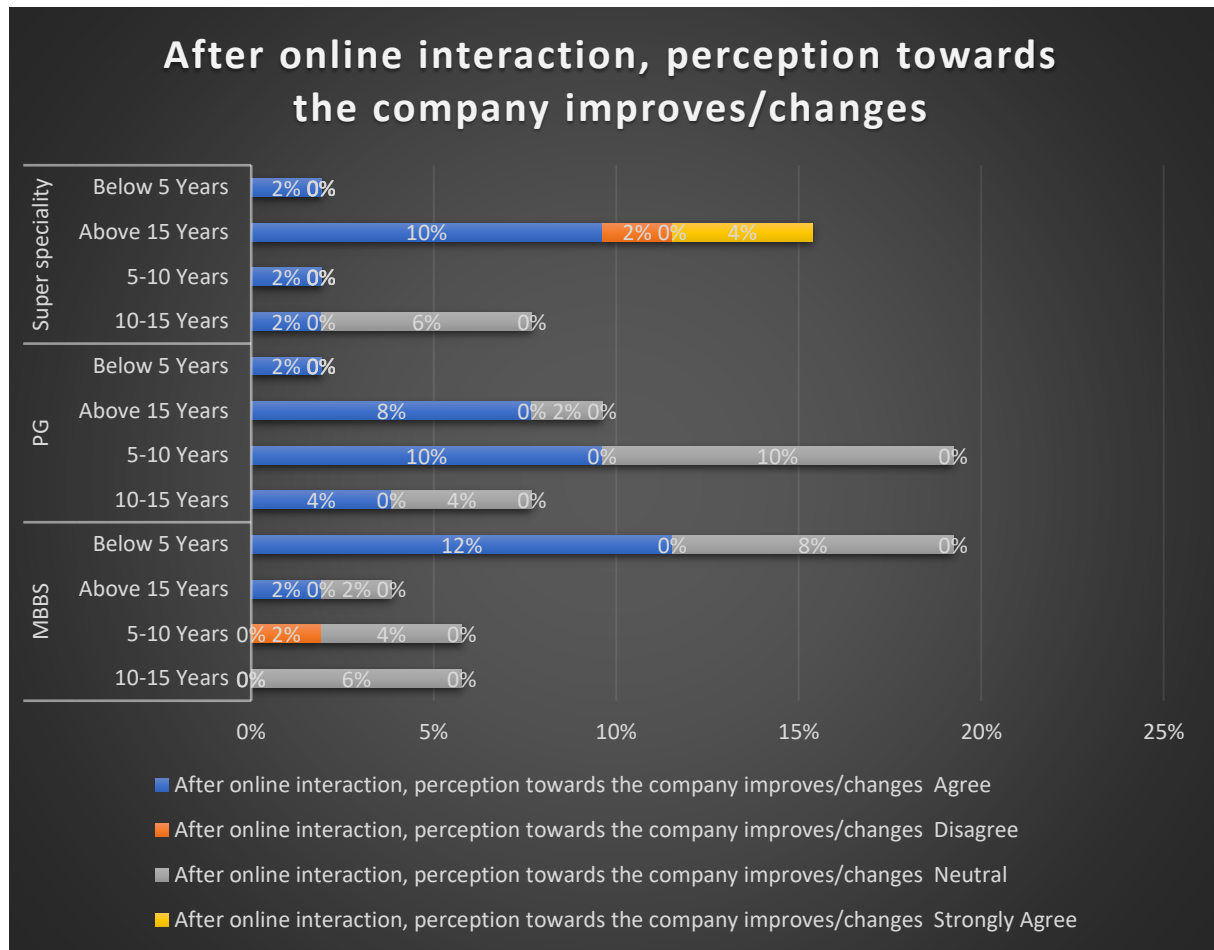
Analysis : This graph shows the Correlation between qualification & year of practice where, 23% of PG doctors who have experience of more that 10 years said yes for online product detailing with the medical reps/ pharma Professionals whereas, 2% of superspeciality doctors who have experience of more than 15 years said no for online product detailing with the medical reps / pharma professionals .

8.B) If yes, Did you ever used these application for having virtual meeting with Market Representative?



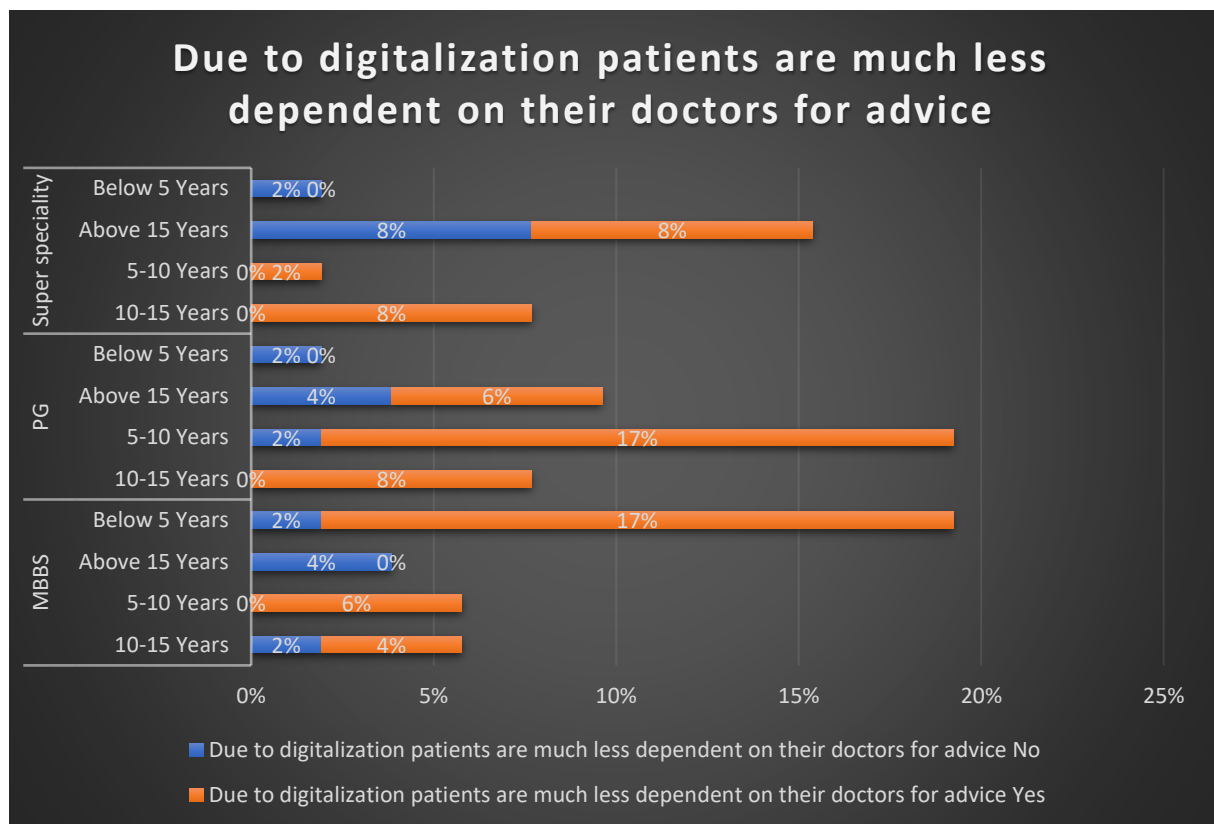
Analysis : This graph shows the relation between doctors with applications used by them where , 17% MBBS doctors prefer Webinar, 17% PG doctors prefer skype and 12% of PG doctors also prefer Zoom . this shows there is more usage of webinars and skype as compared to other two virtual meetings .

8.C) After your online interaction , does your perception towards the company improves/changes:



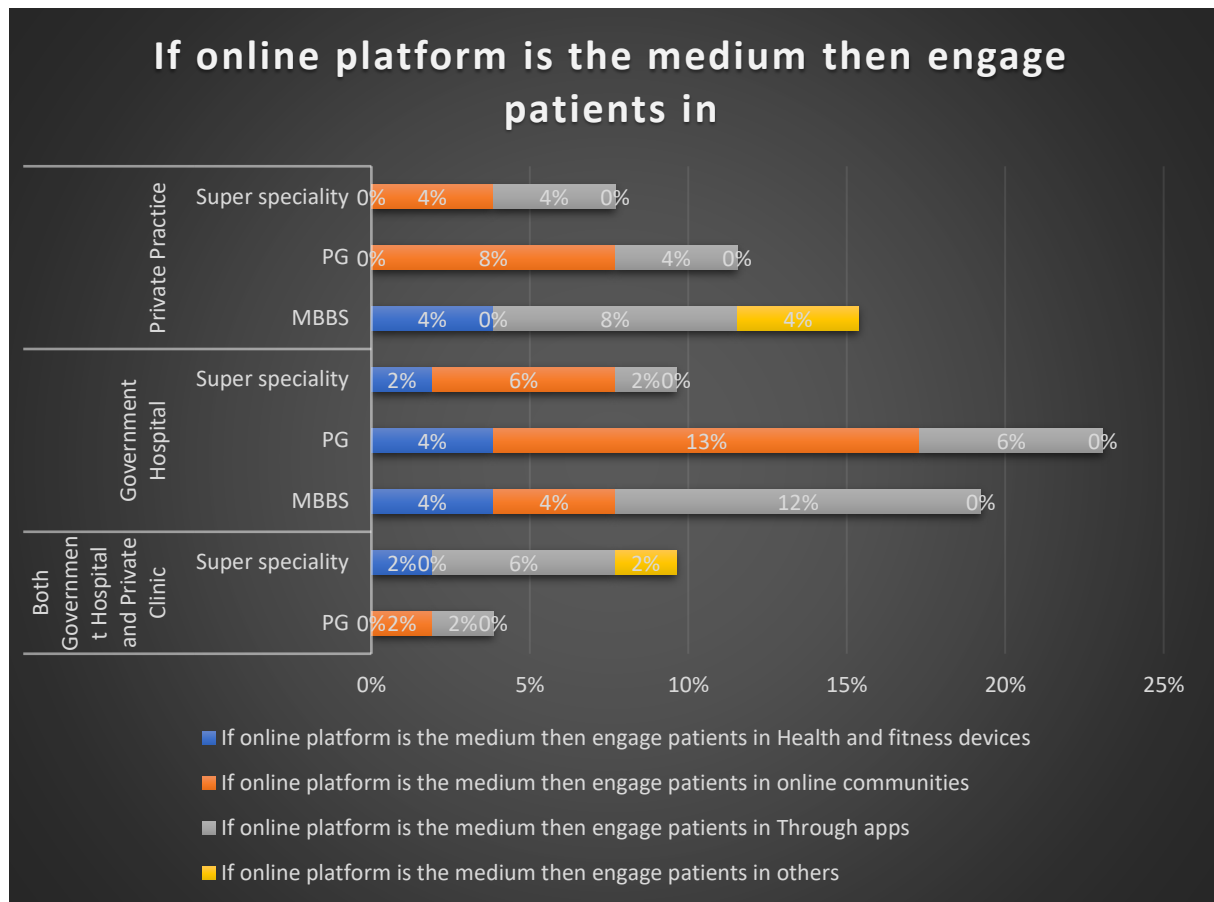
Analysis : The above graph shows the analysis between physician qualification & years of practice with perception towards company improves / changes for example in the above graph , it shows that the 12% of MBBS doctors with below 5 years of experience said they agree , while 2% of MBBS doctors with 5-10 years of experience said they agree whereas 2 % of MBBS doctors with 5-10 years experience said they disagree .

9. Due to digitalization do you think patients are much less dependent on their doctors for advice?



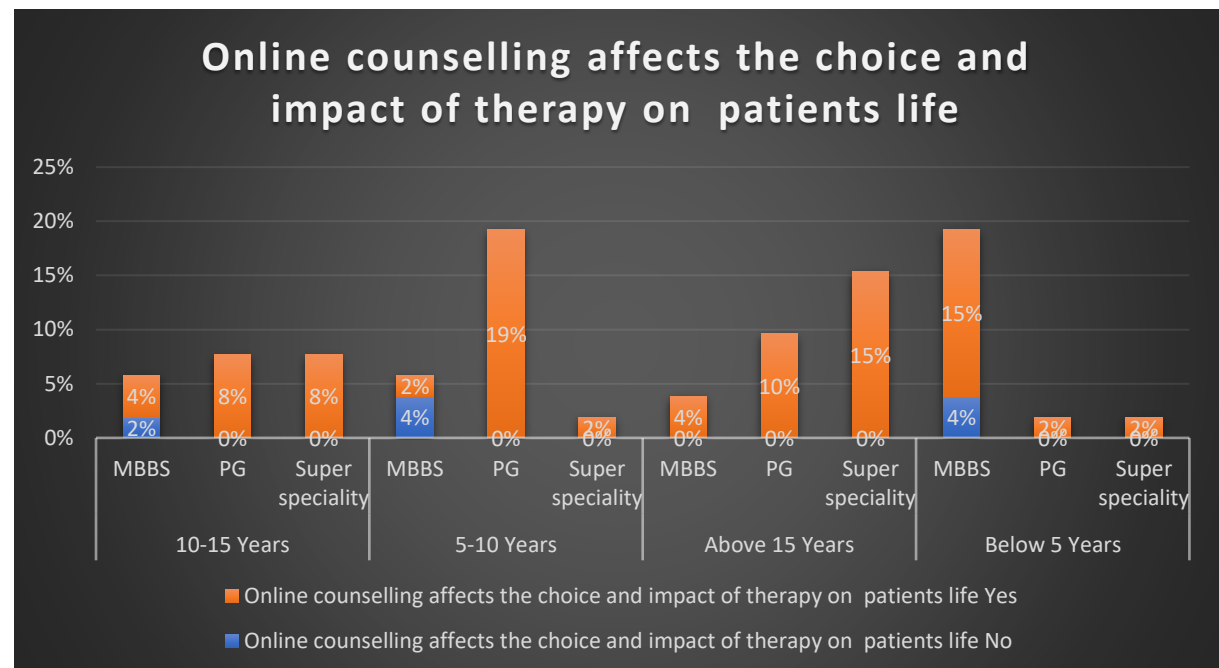
Analysis : The above graph shows the analysis between physician qualification & years of practice with do doctors think due to Digitalization patients are much less dependent on their doctors for example in the above graph , it shows that the 17% of MBBS doctors with below 5 years of experience said yes whereas, 4% MBBS doctors who were above 15 years of experience said no . Overall it show patients are much less dependent on their doctors for advice.

10. If online platform is the medium then how would you engage your patients ?



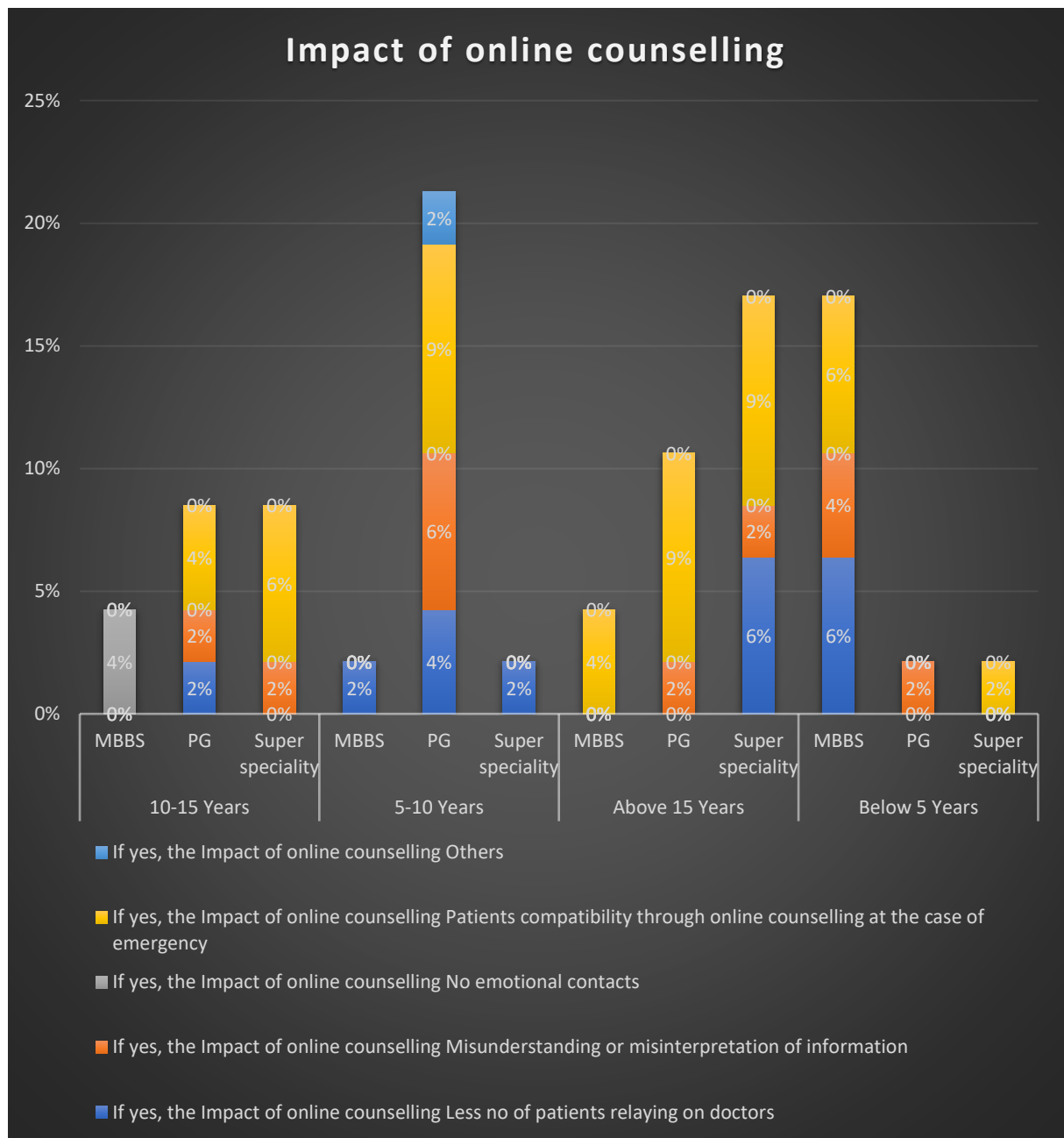
Analysis : The above graph shows the analysis between physician qualification & Place of practice with which platform do doctors engage with patients for example in the above graph , it shows that 13% PG doctors who work in Government hospital said they use of online communities for engaging with their patients 4% of MBBS doctors who work in government hospital use Health and Fitness devices and only 2% speciality doctors who are in government hospitals use apps to engage with the patients .

11. a) Does online counselling affects the choice and impact of therapy on patients life ?



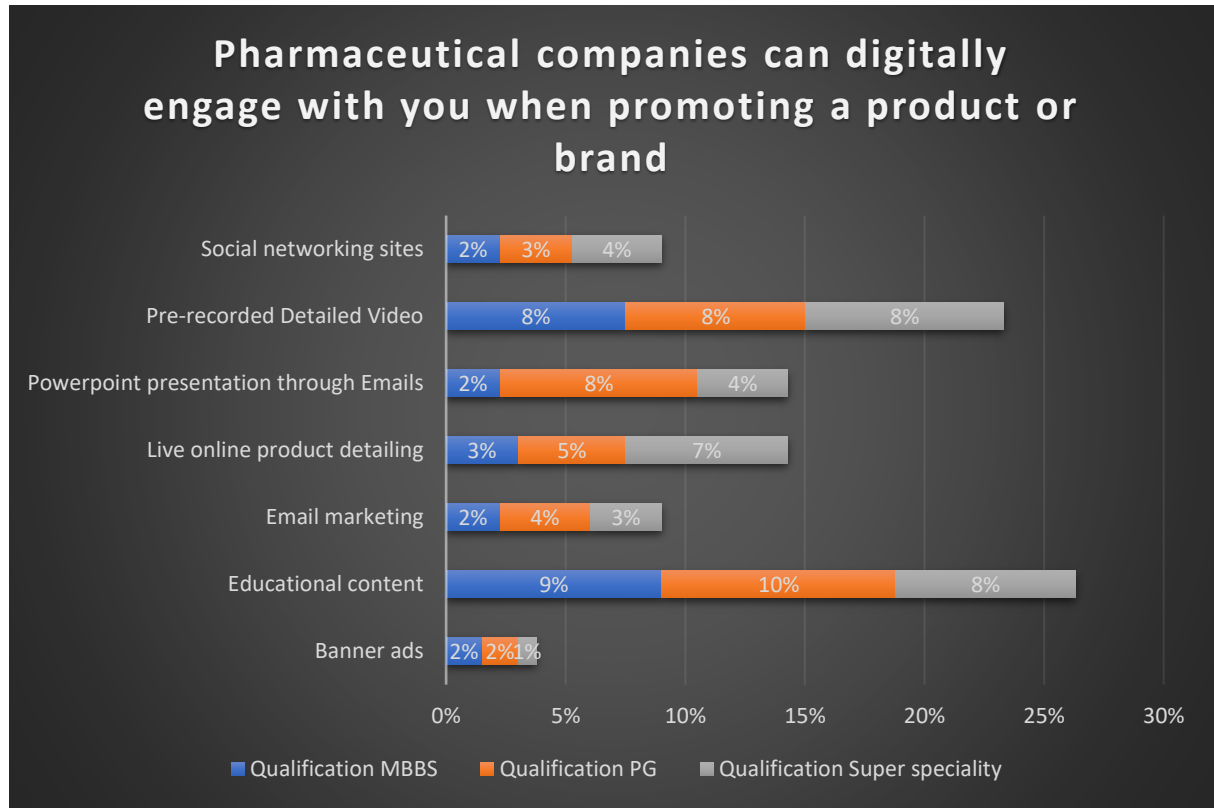
Analysis : The above graph shows the analysis between physician qualification & years of practice with choice and impact of therapy on patients life for example in the above graph , it shows that the 19% of PG doctors with 5-10 years of experience said yes, whereas 4% MBBS doctors with 5-10 years experience said no , so on the basis of graph it shows that online counselling affects the choice and impact on patients life .

11 b) If yes, what is the Impact of online counselling?



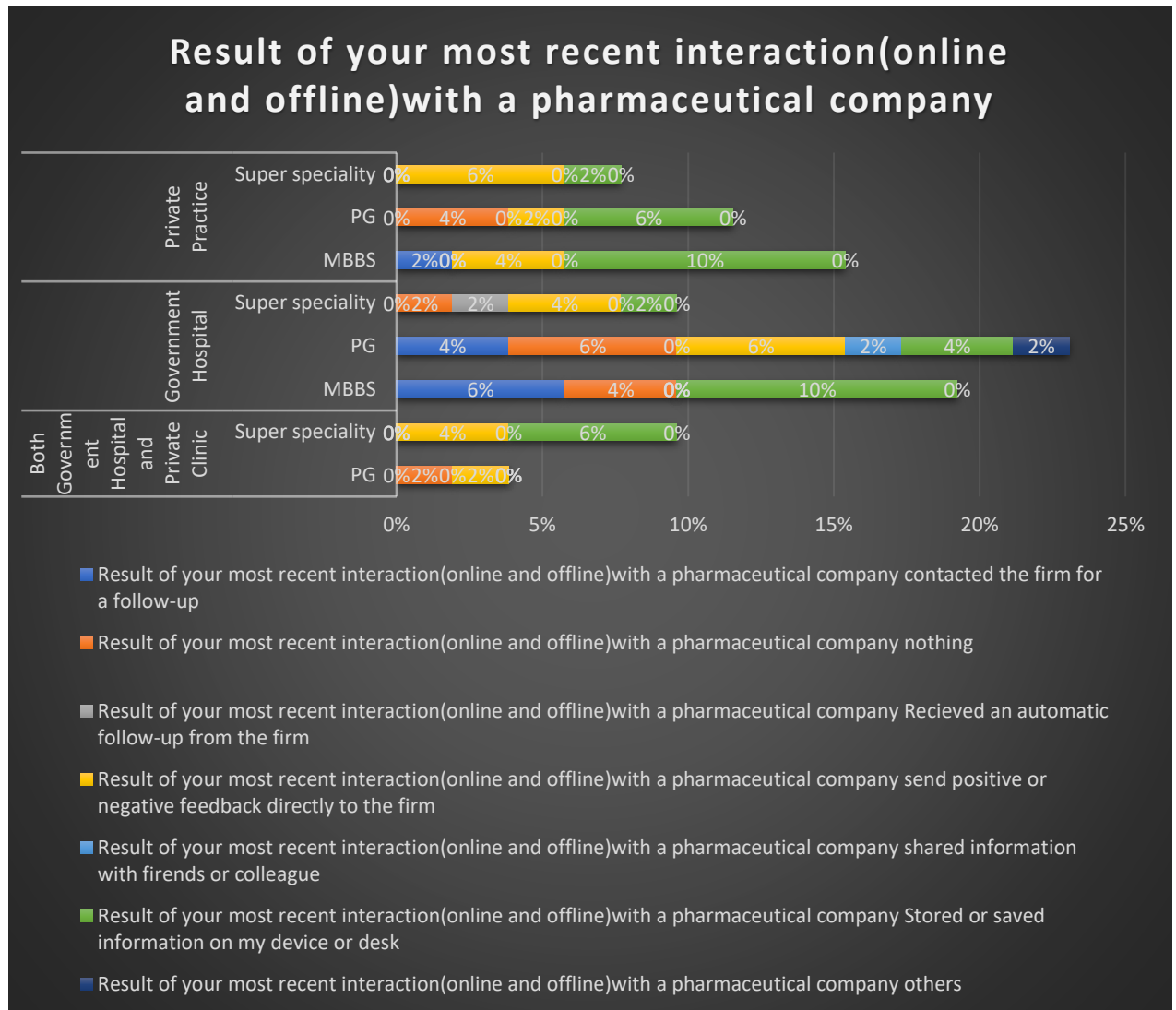
Analysis : The above graph shows the analysis between physician qualification & years of practice with impact of online counselling for example in the above graph , it shows that the 9% PG doctors with 5-10 years experience shows the impact of online counselling is due to patient compatibility through online counselling at the case of emergency , where 2% of MBBS doctor said less number of patients are relaying on doctors and 2% of super speciality with 5-10 years of experience also responded for less number of patients relaying on doctors .

12. How pharmaceutical companies can digitally engage with you when promoting a product or brand?



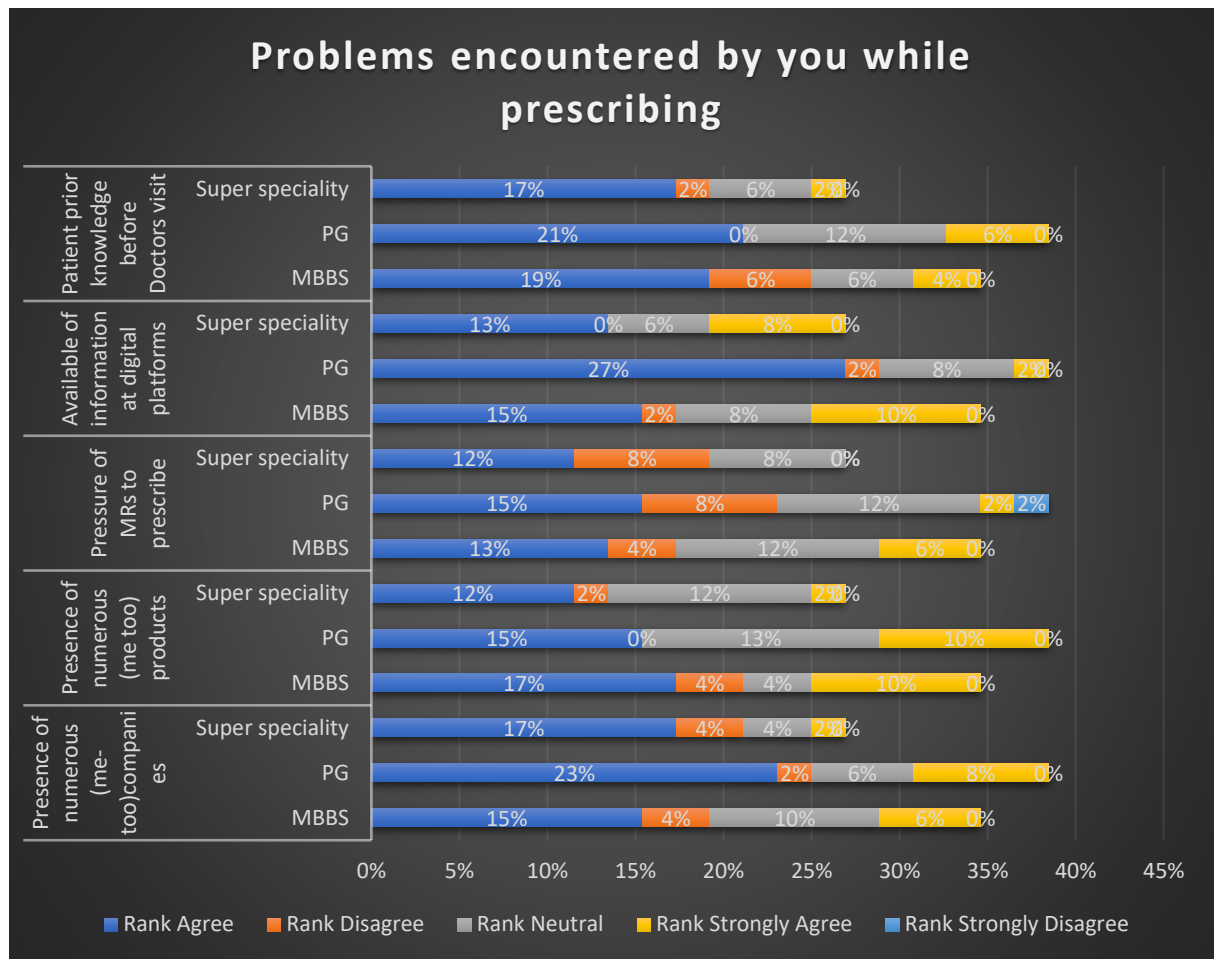
Analysis : The above graph shows the analysis between physician qualification & how pharma companies digitally engage with doctors when promoting a product or brand for example in the above graph , it shows that the 8%MBBS doctors prefer pre- recorded detailed video , 10% of PG doctors prefer educational content . this shows the PG doctors are more interested when it comes to digital engagement with pharma company .

13. What did you do as a result of your most recent interaction (online and offline) with a pharmaceutical company?



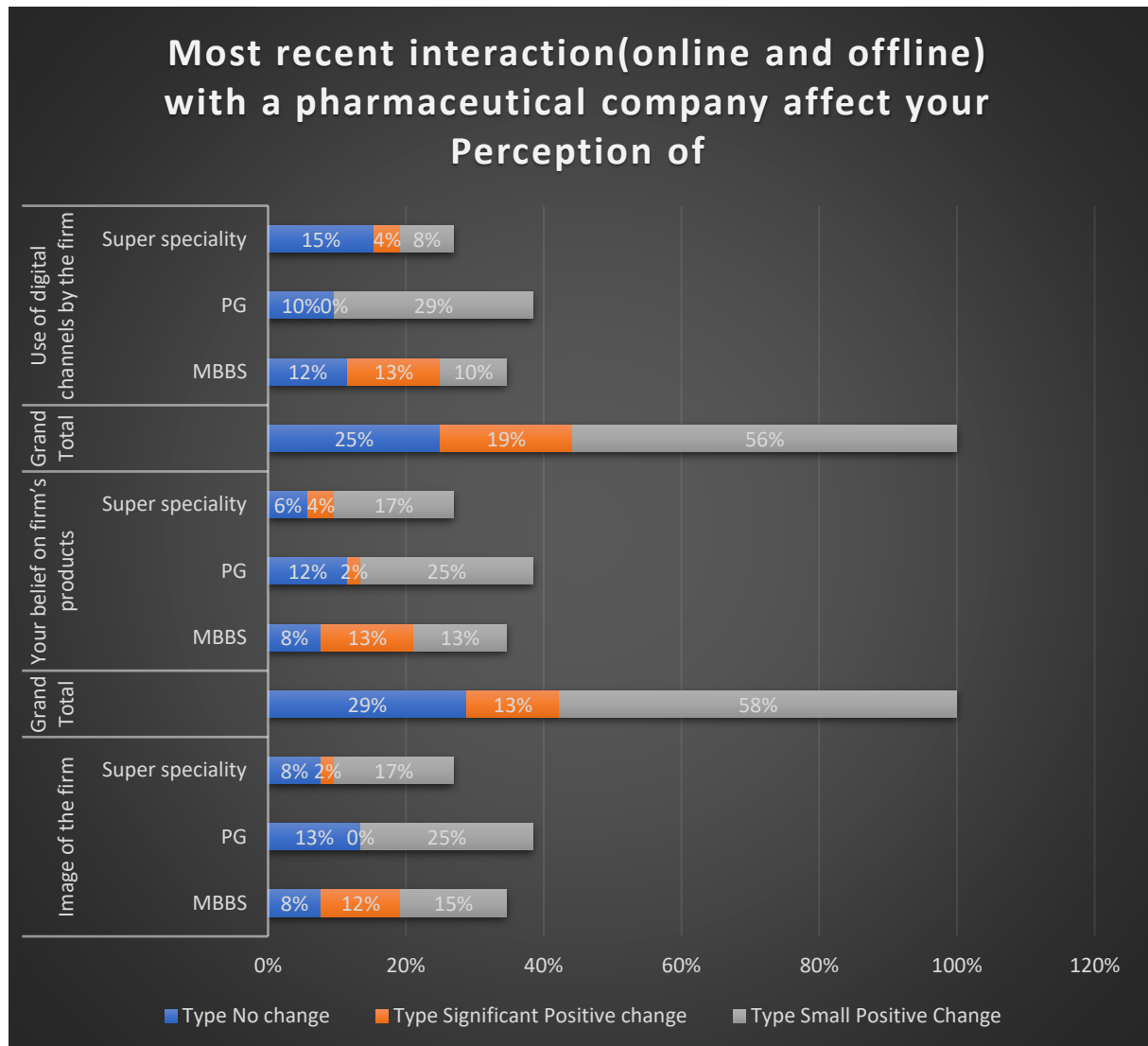
Analysis : The above graph shows the analysis between physician qualification & place of practice with doctors most recent interaction with pharmaceutical for example in the above graph , it shows that the 2% superspeciality doctors, 6% PG doctors and 10% of MBBS doctor from private practice responded for stored or saved information on my desk or device. similarly 6% speciality doctors ,2% PG doctors and 4% MBBS doctors from private practice responded for sending positive or negative feedback directly to the firm . this shows that many doctors store the information in device and some send the positive and negative feedback directly to the firm .

14. Please rank the problems encountered by you while prescribing ?



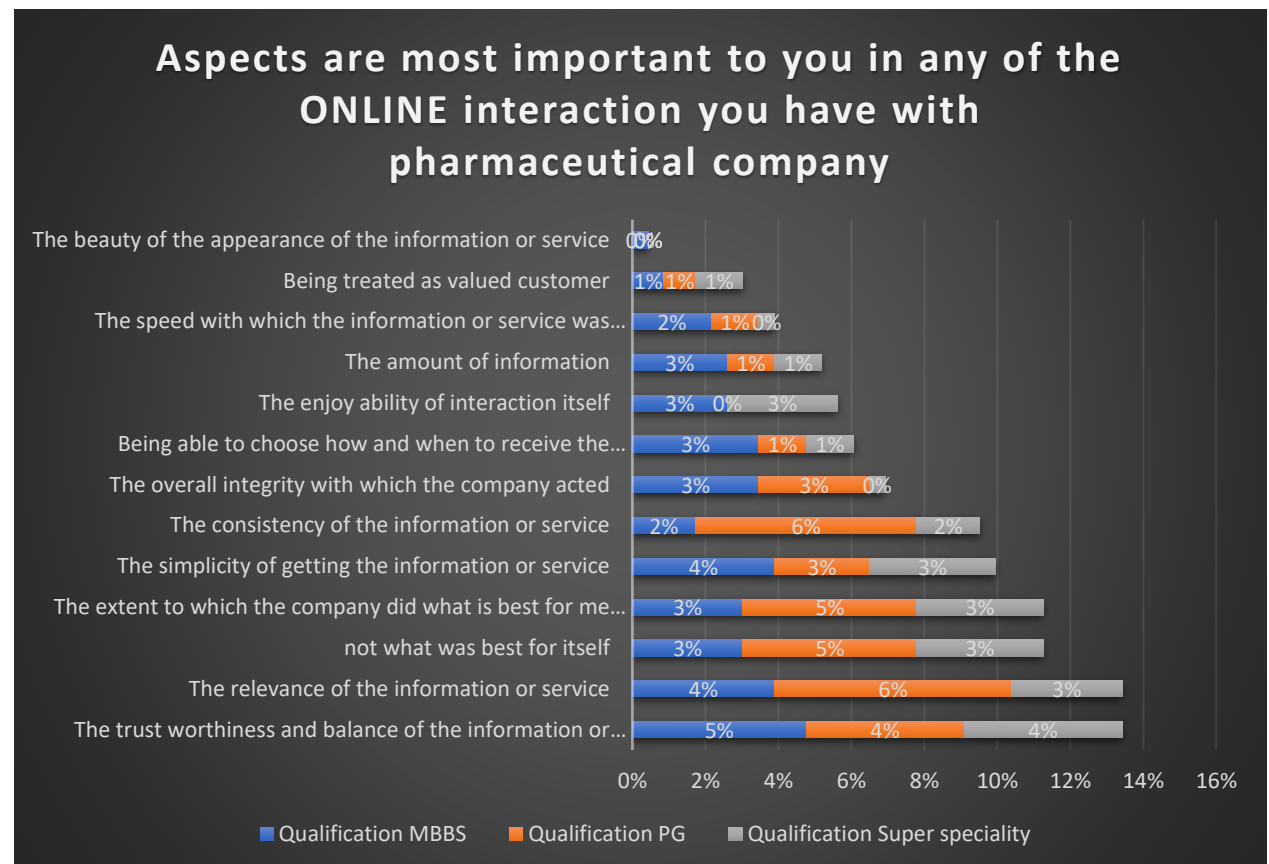
Analysis : The above graph shows the analysis between physician qualification & Problems that encountered while prescribing for example in the above graph , it shows that the 17% superspeciality doctors agreed, 21% PG doctors also agreed and 19% of MBBS doctor agreed for patients prior knowledge before doctors visit . similarly 12% speciality doctors agree ,15% PG doctors agree and 13% MBBS doctors agree that there is a pressure of MRs to prescribe

15. How did your most recent interaction (online and offline) with a pharmaceutical company affect your Perception of the following?



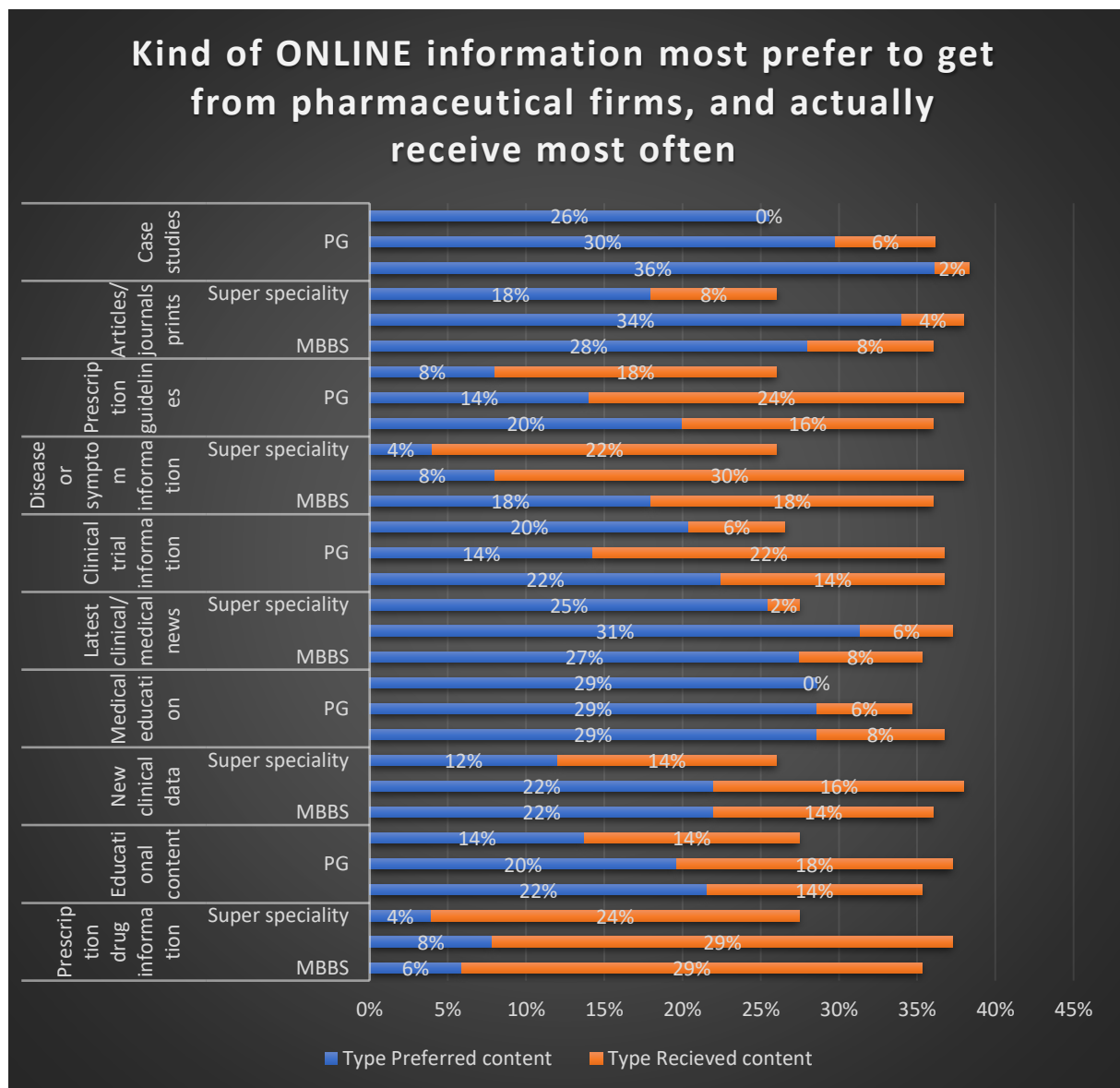
Analysis : The above graph shows the analysis between physician qualification & how the perception affects the pharmaceutical company for example in the above graph , it shows that the 15% speciality doctors responded for no change ,13% MBBS doctors said there is significant positive change and 10% PG doctors said there is a small positive change in use of digital channels by the firm .

16. What all aspects are most important to you in any of the ONLINE interaction you have with pharmaceutical company?



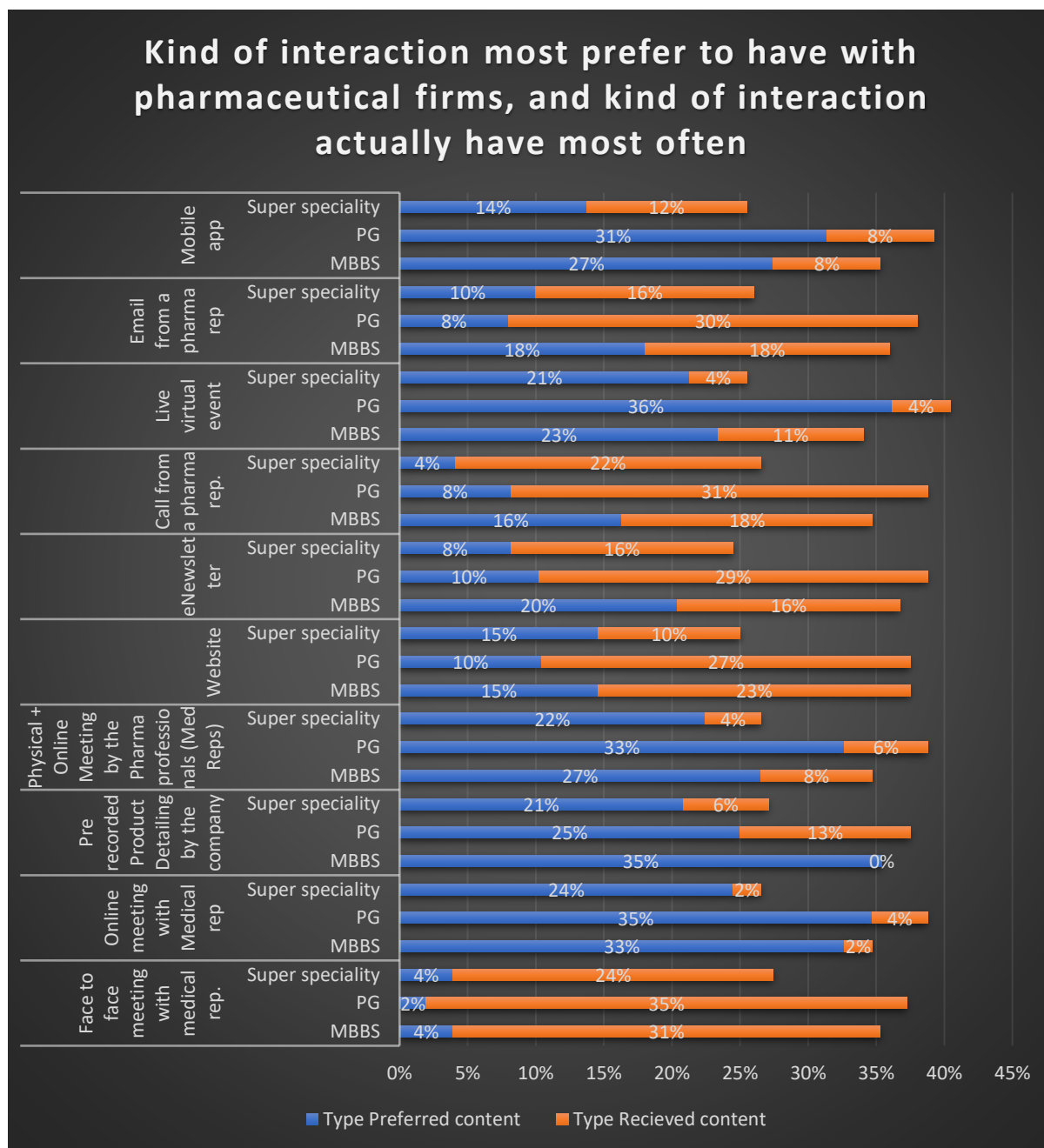
Analysis : The above graph shows the analysis between physician qualification & aspect that are important in any online interaction with pharma company for example in the above graph , it shows that the 5% of MBBS doctors shown importance for the trust worthiness and balance of the information or services 6% of PG doctors shown importance of consistency of the information or services 1% speciality doctors shown importance for the amount of information the pharma company provide .

17. What kind of ONLINE information do you most prefer to get from pharmaceutical firms, and what do you actually receive most often?



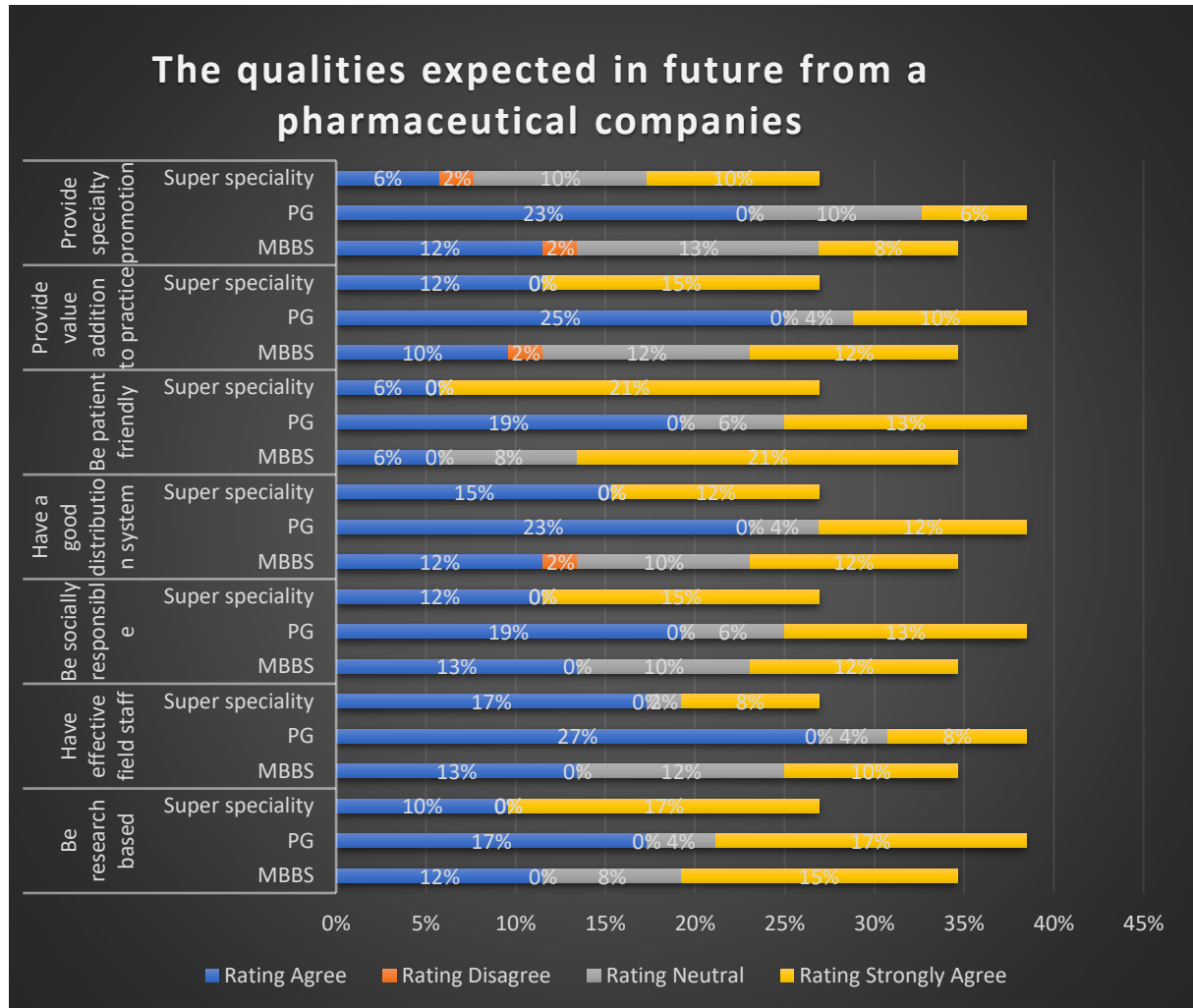
Analysis : The above graph shows the analysis between physician qualification & kind of ONLINE information mostly prefer to get from pharmaceutical firms for example in the above graph , it shows that the 26% speicality doctors , 30% PG , and 36% MBBS doctors preferred case studies whereas , 18% speicality doctors , 34% PG , 28% MBBS doctors preferred articles / journal print .

18. What kind of interaction do you most prefer to have with pharmaceutical firms, and what kind of interaction do you actually have most often?



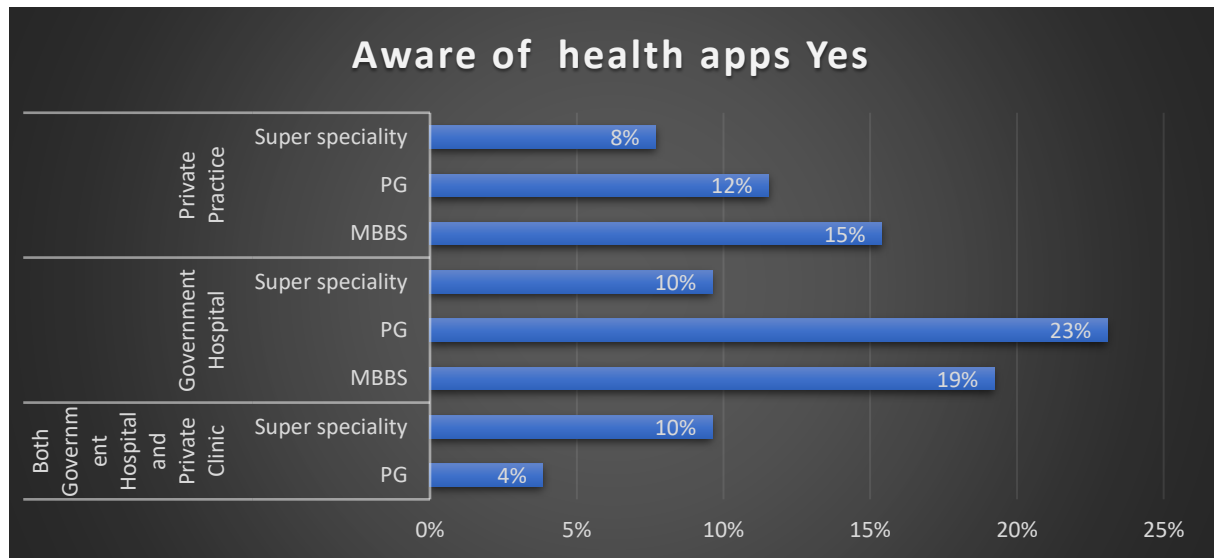
Analysis : The above graph shows the analysis between physician qualification & kind of information mostly prefer to get from pharmaceutical firms for example in the above graph , it shows that the 14% speaciality doctors , 31% PG , and 27% MBBS doctors preferred mobile apps whereas , 4% speaciality doctors , 8% PG , 16% MBBS doctors preferred call from pharma rep.

19. Please rate on 1-5 point scale the qualities expected in future from a pharmaceutical companies?



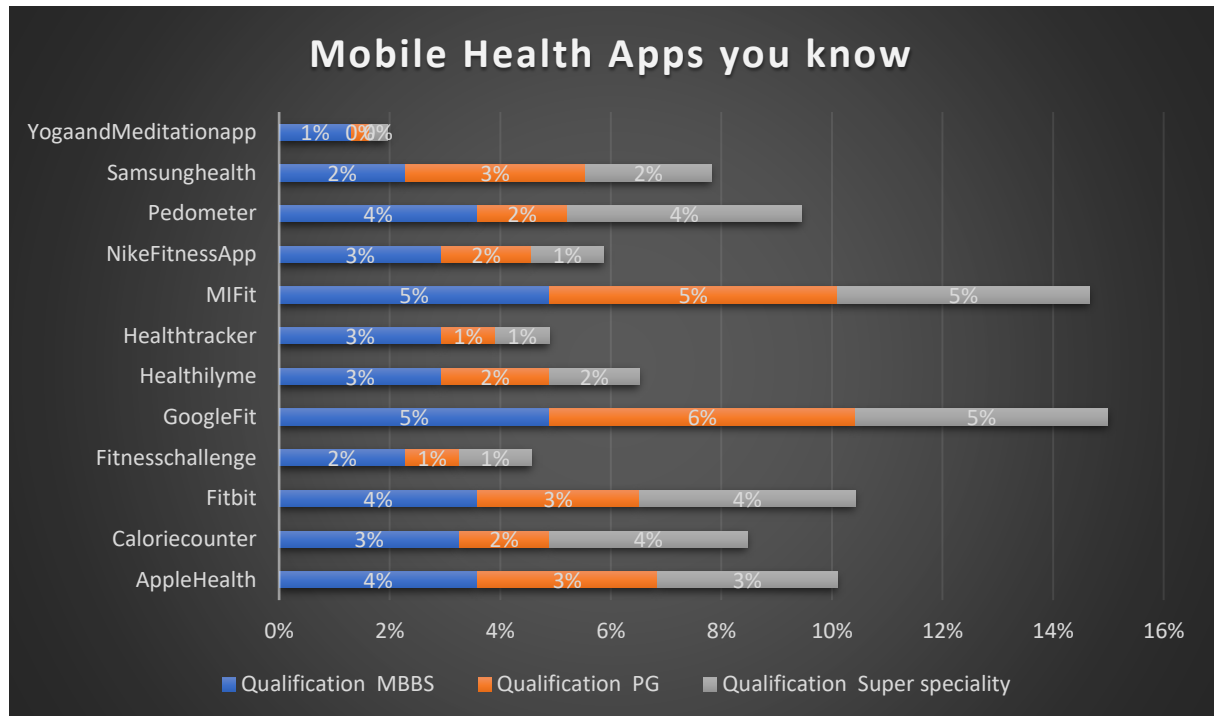
Analysis : The above graph shows the analysis between physician qualification & qualities expected in future from a pharmaceutical companies for example in the above graph , it shows that the 6% speaciality doctors , 23% PG , and 12% MBBS rated agree for providing speciality promotion whereas , 17% speaciality doctors , 27% PG , 13% MBBS doctor rated agree for having effective field staff .

20. a) Are you aware of health apps ?



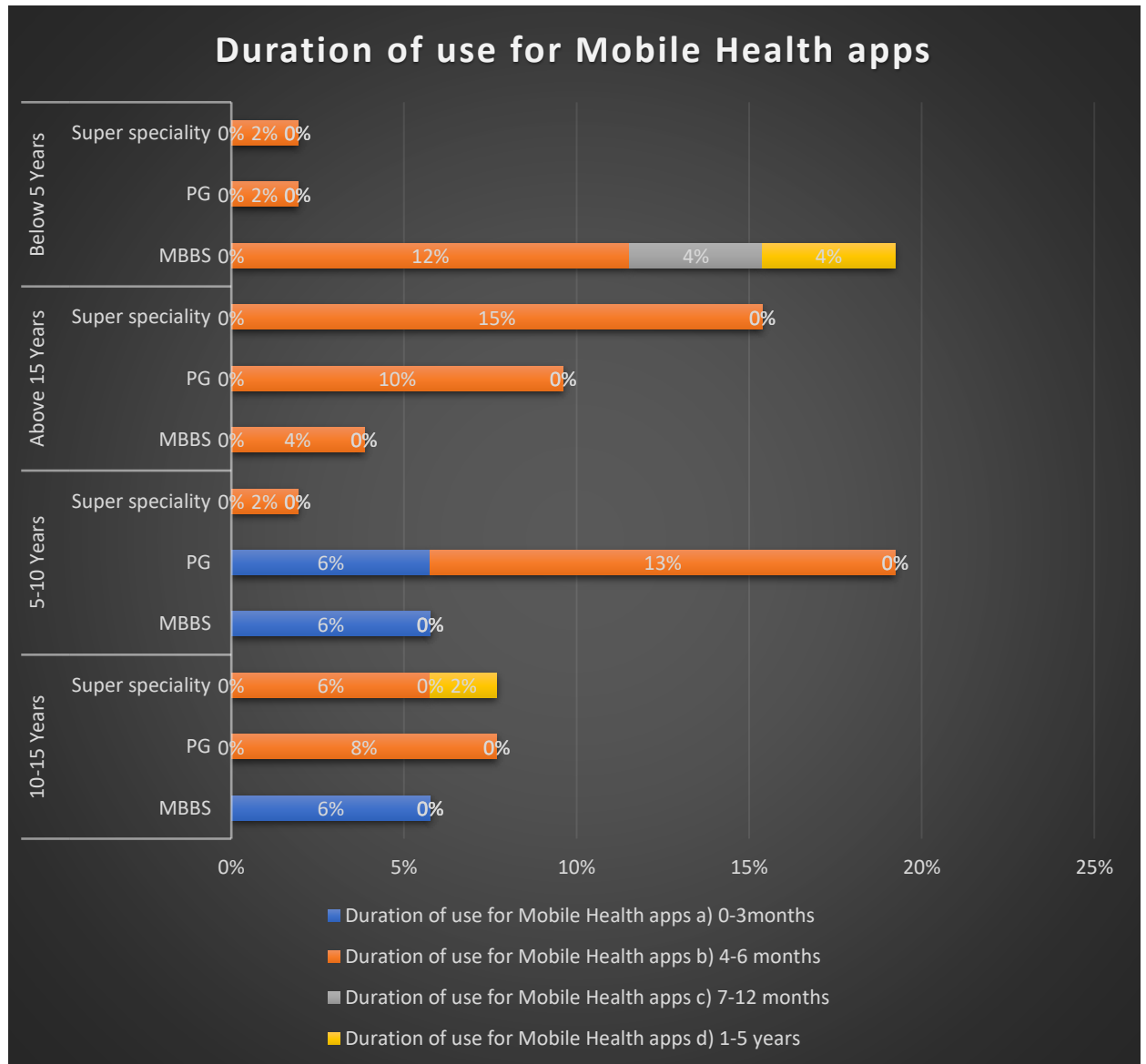
Analysis : The above graph shows the analysis between physician qualification & place of practice with how much awareness is there for health apps for example in the above graph , it shows that the 8% speaciality doctors , 12% PG , and 15% MBBS where from private hospital who are aware of health apps whereas ,in government hospital 10% speaciality doctors , 23% PG , 19% MBBS doctor are aware of health apps . This show most awareness is in government hospital with 23% in PG doctors. As compared to the others.

20.b) If, yes which of the following do you know(please tick the option applicable to you)?



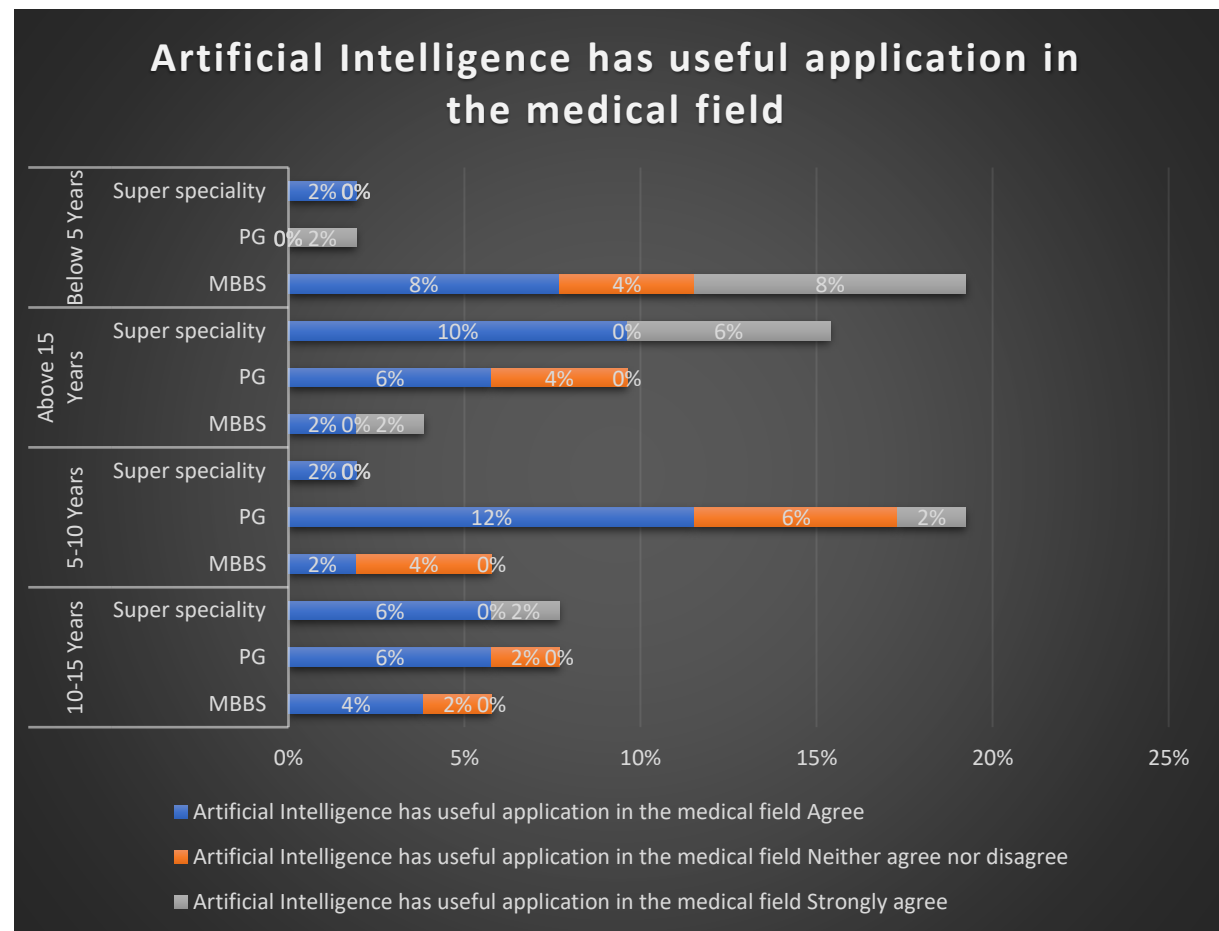
Analysis : The above graph shows the analysis between physician qualification & mobile health apps which doctors are aware of , it shows that the 5% speaciality doctors , 5% PG , and 5% MBBS know about Mifit app whereas , 5% speaciality doctors , 6% PG , 5% MBBS doctor are aware of googlefit health apps . this shows that only 1% of MBBS doctors is aware of yoga and medication app others are not aware of it .

21. What should be the Duration of use for Mobile Health apps?



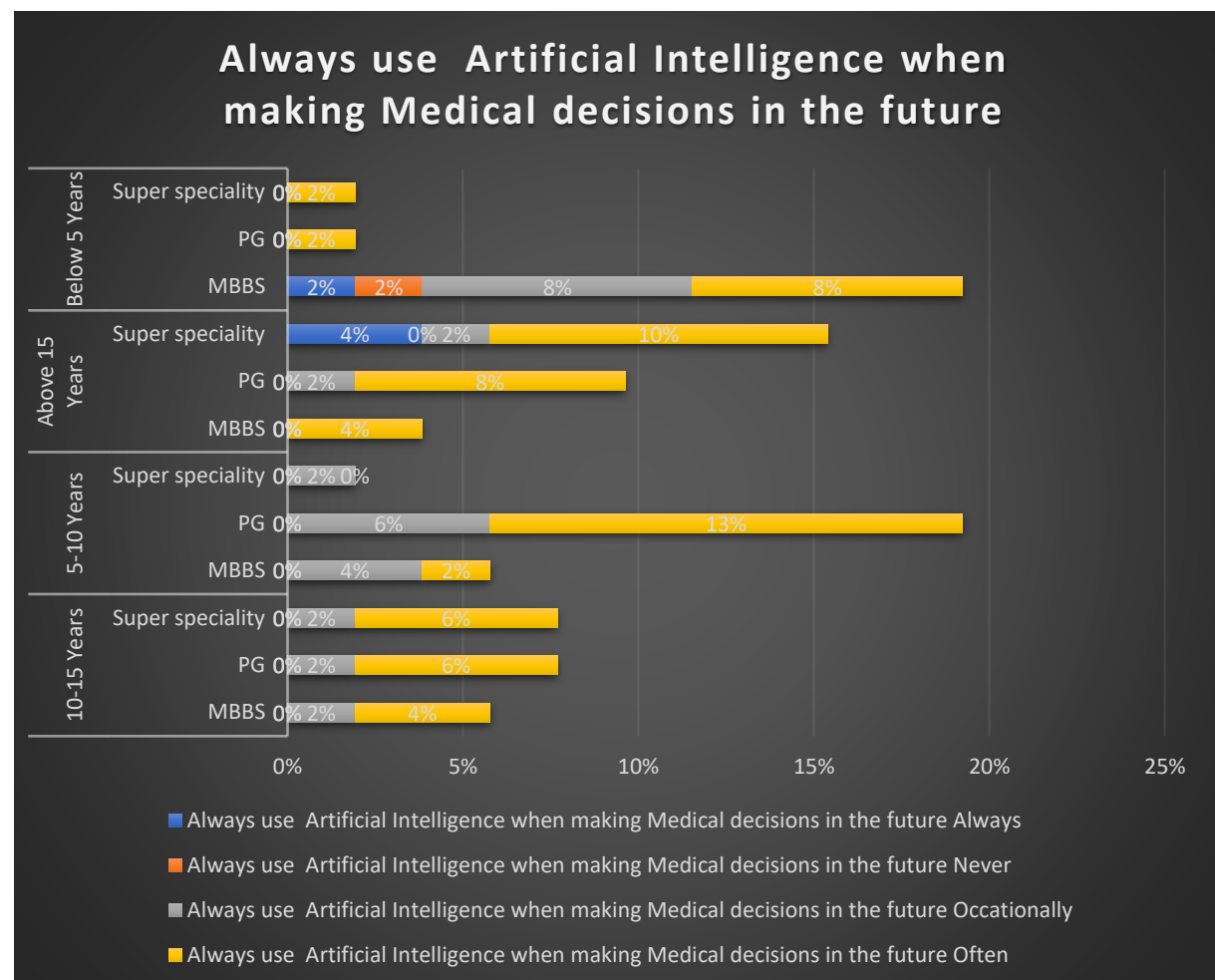
Analysis : The above graph shows the analysis between physician qualification & years of practice with for how much duration the health apps be used for example in the above graph , it shows that the 6% speaciality doctors , 8% PG , with more than 10-15 years of experience said mobile app should be used for 4-6 months whereas, 6% MBBS doctors with more than 10 years of experience responded for using mobile health apps for 0-3 months . overall from this we came to know that health apps should e used not more than 4-6 months

22. Do you think that Artificial Intelligence has useful application in the medical field?



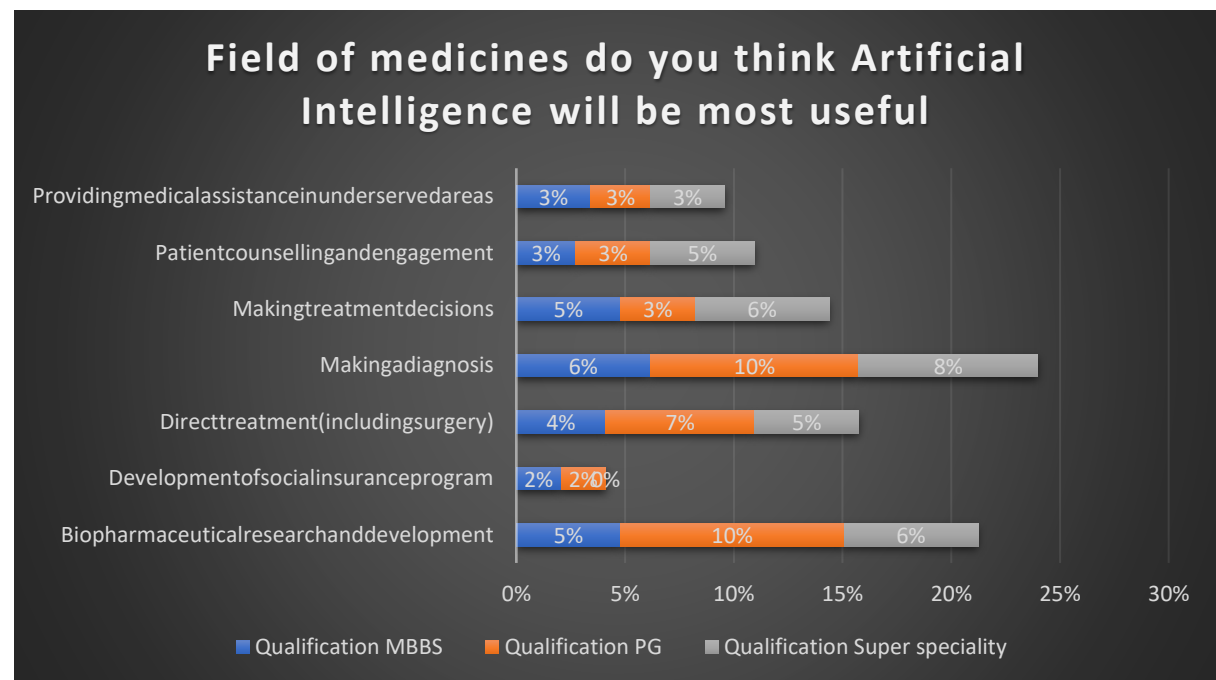
Analysis : The above graph shows the analysis between physician qualification & year of practice with do doctors think artificial intelligence has useful application in medical field for example is there in the above graph , it shows that the 10% speaciality doctors , 6% PG , and 2% MBBS with above 15% of experience agreed for the use of AI ,whereas 6% speaciality doctors , 6% PG , 4% MBBS with 10-15 years of experience responded agree for use of AI . overall this graph shows Artificial Intelligence has useful application in the medical field .

23 . Do you think that you would always use AI when making Medical decisions in the future?



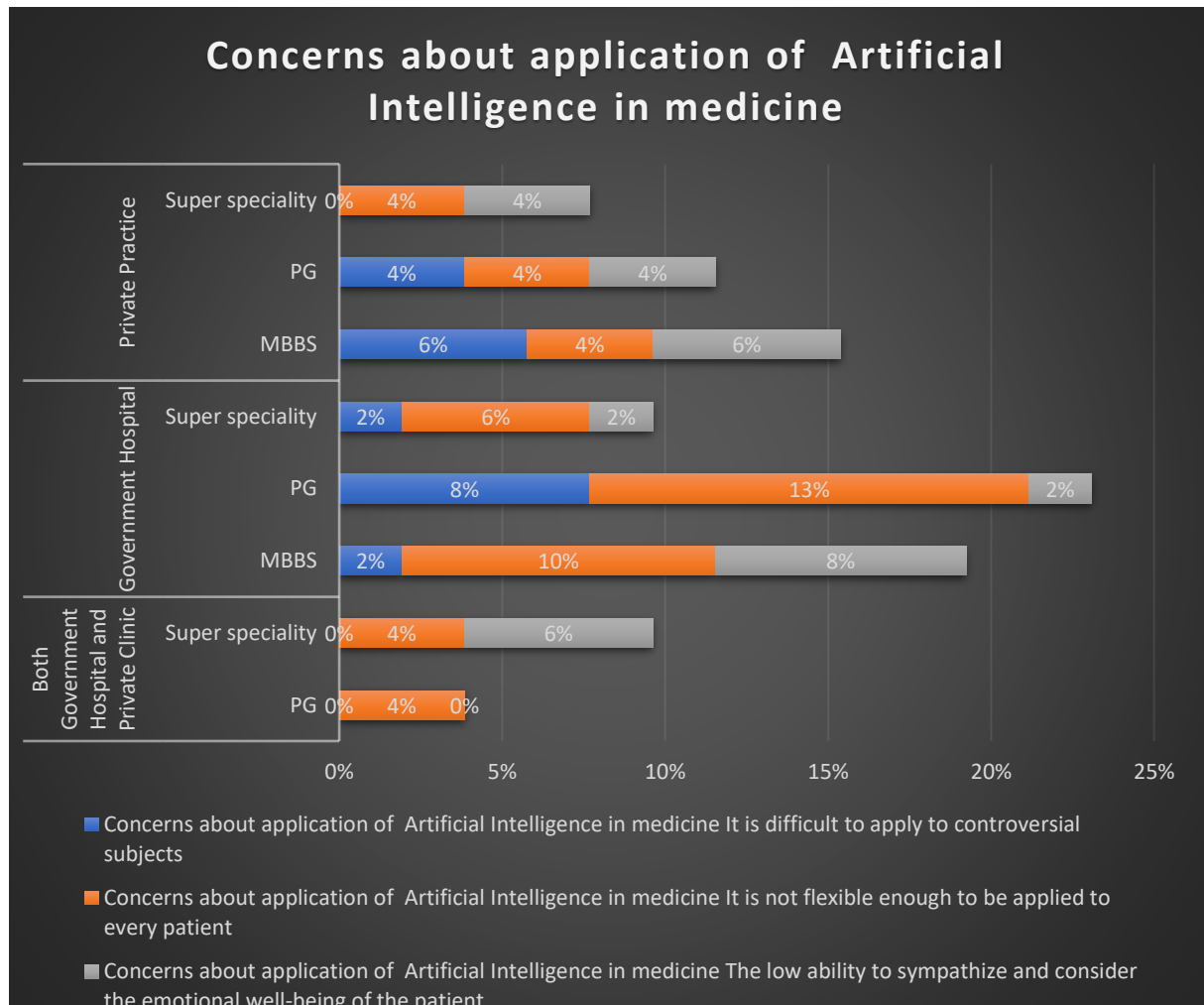
Analysis : The above graph shows the analysis between physician qualification & year of practice with using AI when making Medical decisions in the future for example in the above graph , it shows that the 2% speaciality doctors , 6% PG , and 4% MBBS doctors with 5-10 years of experience responded ocaitionally whereas 6% speaciality doctors , 6% PG , 4% MBBS with 10-15 years of experience responded for often. This graph shows there will be often use of artificial intelligence when making medical decisions in the future .

24. In which field of medicines do you think artificial Intelligence will be most useful?



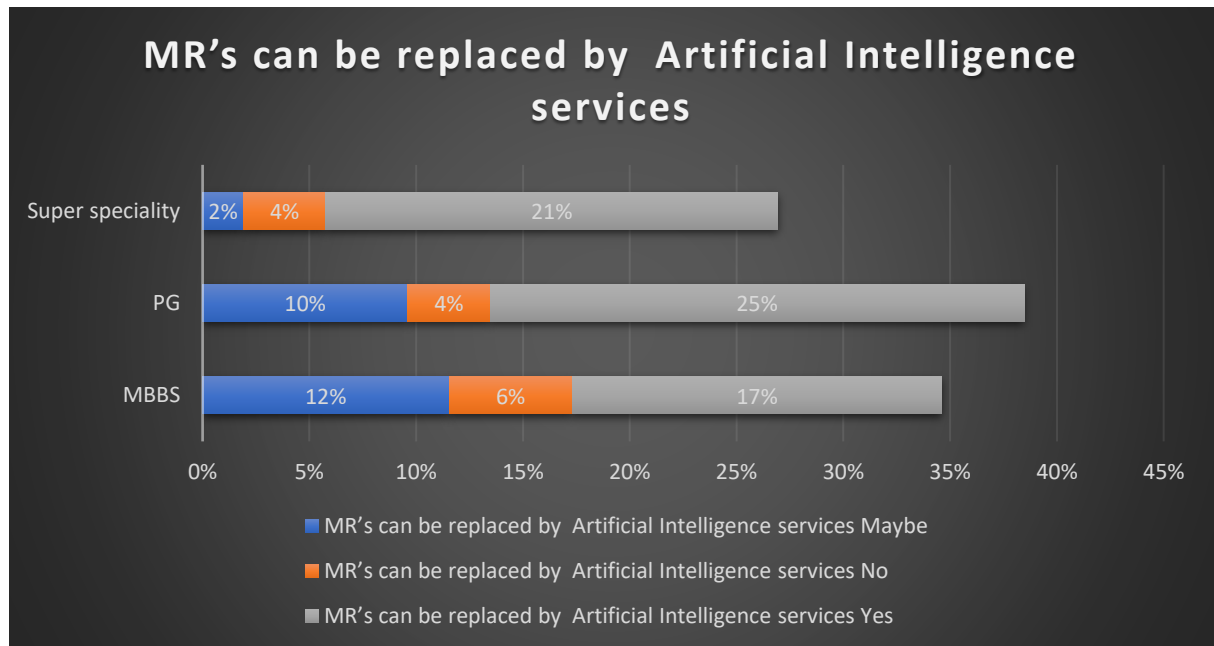
Analysis : The above graph shows the analysis between physician qualification with field of medicines do doctors think artificial Intelligence will be most useful for example in the above graph , it shows that the 8% speaciality doctors , 10% PG , and 6% MBBS doctors think in making diagnostic these AI will be used whereas 6% speaciality doctors , 10% PG , 5% MBBS think in biopharmaceuticl research and development these AI can be used . overall PG Docotrs think more about the AI use as compared to others.

25. What are your concerns about application of AI in medicine?



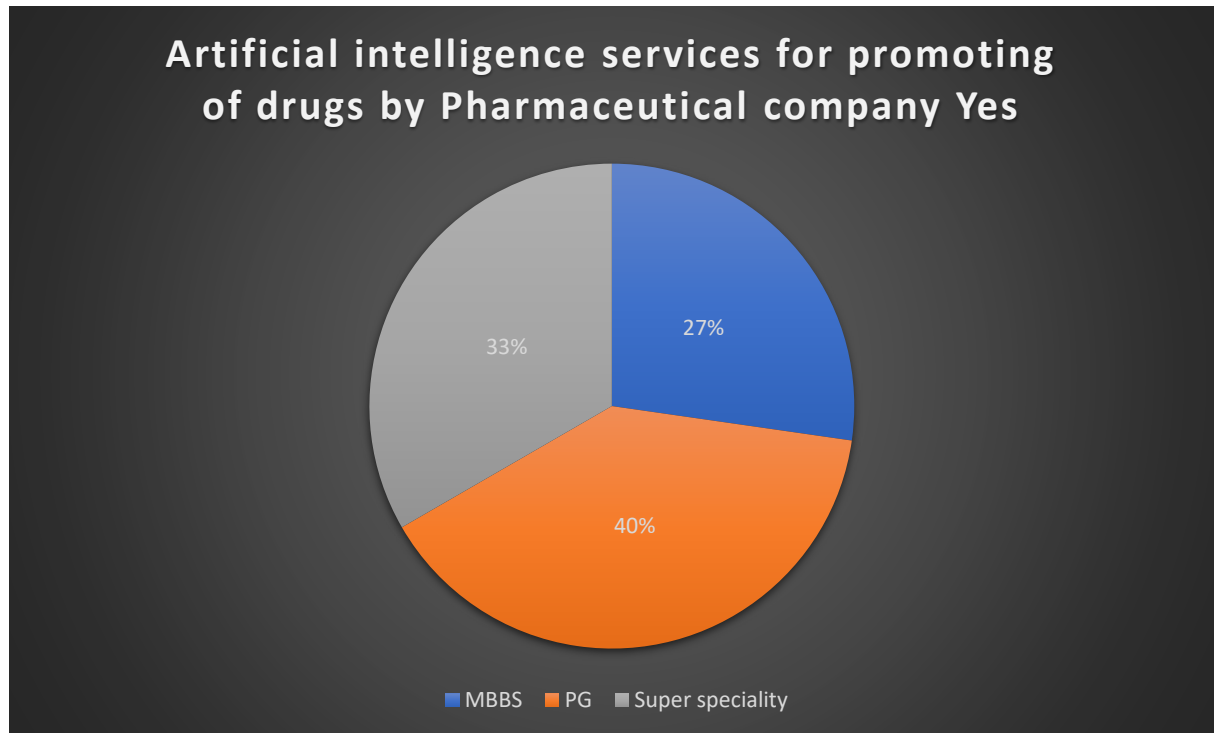
Analysis : The above graph shows the analysis between physician qualification & place of practice with concerns about application of AI in medicine for example in the above graph , it shows that the 2% speaciality doctors , 8% PG , and 2% MBBS doctors who practice in government hospitals think it is difficult to apply to controversial subjects whereas 6% speaciality doctors , 13% PG , 10% MBBS who work in government hospitals think it is not flexible enough to be applied to every .

26.a) Do you think MR's can be replaced by AI services?



Analysis : The above graph shows the analysis between physician qualification with do doctors think MRs can be replaced with AI services for example in the above graph , it shows that the 21% speaciality doctors , 25% PG , and 17% MBBS doctors responded yes whereas 4% speaciality doctors , 4% PG , 6% MBBS doctors responded no , so this graph tells use that yes, MRs can be replaced by Artificial Intelligence services .

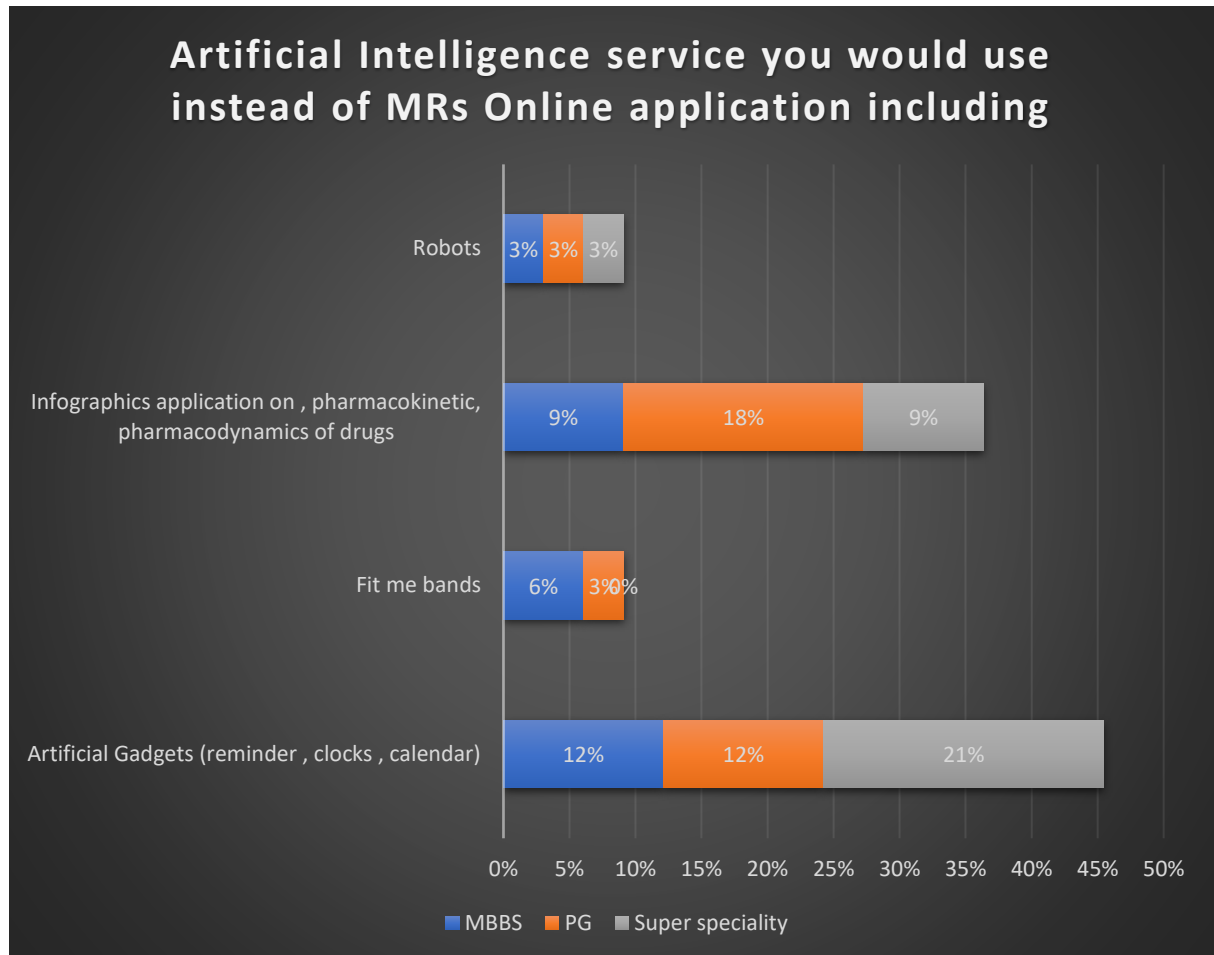
26.b) If yes, Will you prefer any artificial intelligence (AI) services for promoting of drugs by pharmaceutical company?



Analysis : The above graph shows the analysis between physician qualification with will doctors prefer artificial intelligence (AI) services for promoting of drugs by pharmaceutical company for example in the above graph , it shows that the 33% speaciality doctors , 40% PG , and 27% MBBS doctors responded yes So, this graph tells us that yes, doctors prefer artificial intelligence (AI) services for promoting of drugs by pharmaceutical company mostly the super speciality .

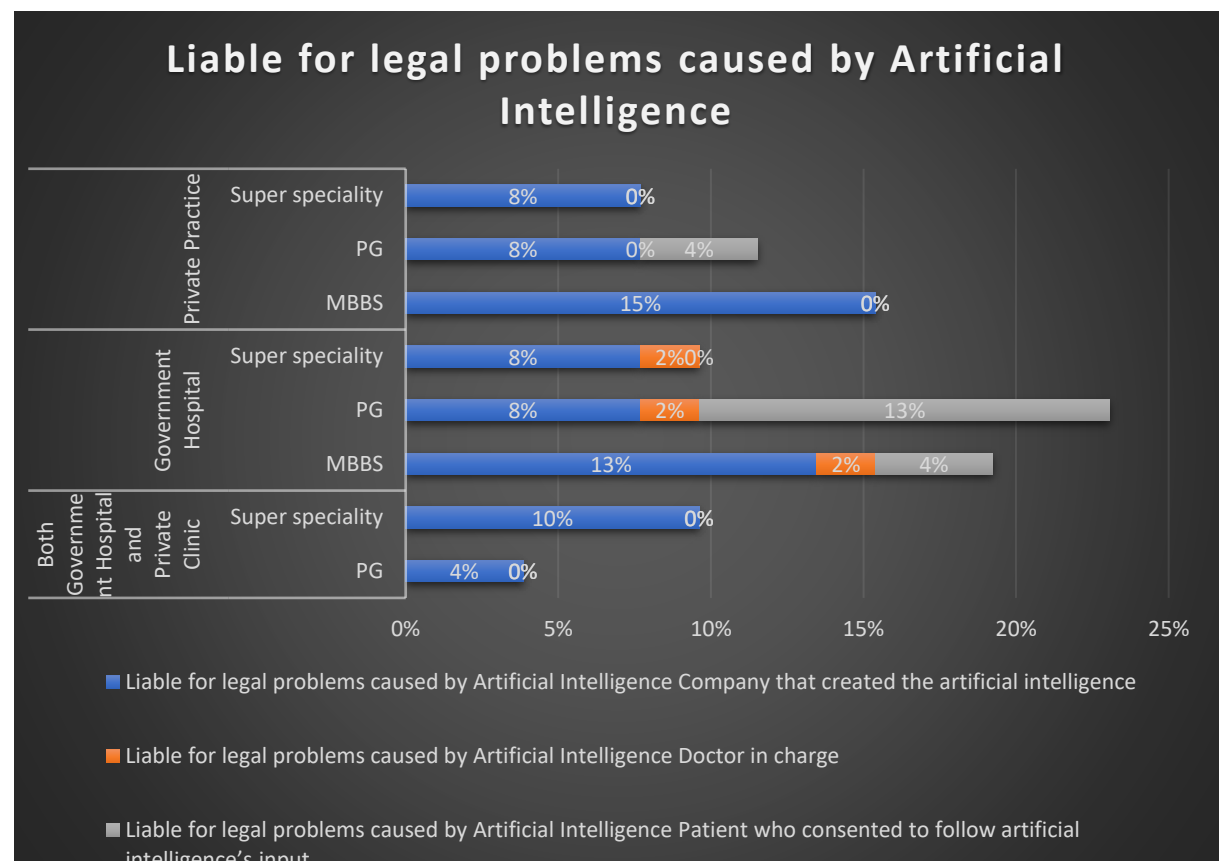
26.c) If yes , From the following which AI service you would use instead of MRs

Online application including



Analysis : The above graph shows the analysis between physician qualification with which AI service would doctors use instead of MRs Online application for example in the above graph , it shows that the 9% speciality doctors , 18% PG , and 9% MBBS doctors responded for Infographics application on pharmacokinetic , pharmacodynamic of drugs whereas , 21% speciality , 12% PG , and 12% MBBS doctors responded for artificial gadgets So, this graph tells us that there is more use of artificial Gadgets and Infographic application in AI service which would be used instead of MRs Online application .

27. Who do you think will be liable for legal problems caused by artificial intelligence?



Analysis : The above graph shows the analysis between physician qualification & place of practice with whom doctors think be liable for legal problems caused by artificial intelligence for example in the above graph , it shows that the 8% speaciality doctors , 8% PG , and 15% MBBS doctors in private clinic responded for company that created artificial intelligence whereas , 8% speciality , 8% PG , and 13% MBBS doctors from government hospital responded for company that created the artificial intelligence So, this graph tells us that the company created AI will be liable for legal problems caused by artificial intelligence.

6. **RESULT:**

The survey was conducted in pan india during April 2020 to July 2020 . these include 50 doctors . From the data it is been observed that male doctors with 61% where more interested in filling the forms rather females who were 38 % . Out of them 52% where from government hospital and 34% of doctors were working in private practice. Through this survey we found that 80% of doctors have experienced online product detailing with medical reps/ pharma professional where they used applications having virtual metting more on webinars (37%) as compared to other applications .51% doctors said through this online interaction the perception of doctors changes towards the company and due to digitalization the doctors think patients are much less dependent on them for advice . we also found that impact of online counselling is more because of patients compatibility through online counselling at the case of emergency . while promoting a product or brand pharmaceutical companies can engage through pre- recorded detailed videos (31%) & through educational content with (35%). Through online information Medical education , latest clinical /medical news and Articles/ journals are the most preferred contents from pharmaceutical company .Company should have effective field staff and good distribution system these are the main qualities expected by the doctors from a pharma company . Now a days everyone is aware of health apps , doctors mostly prefer Google Fit (46%) and MI fit (45%) and the use of these mobile health apps should be not more than 4-6 months . Artificial Intelligence play a very important role in medical field and doctors think use of Artificial Intelligence will be often for making decisions in future . Artificial Intelligence will be used for making a diagnosis and even 63% doctors said MRs can be replaced by Artificial Intelligence and 95% doctors prefer this service for promoting drugs by pharmaceutical company . with the help of infographics on pharmacokinetics , pharmacodynamics of drug Artificial Intelligence service would be used instead of MRs .

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8. ANNEXURE:

1. Name (optional): -----

2. Gender:

- a) Male
- b) Female

3. Qualification:

- a) MBBS
- b) PG
- c) Super speciality

4. Place of obtaining Medical Education:

- a) Within India
- b) Outside India

5. (a) Place of practice :

- a) Government Hospital
- b) Private Practice
- c) Both Government hospital and private clinic
- d) Private institution
- e) Both government and private hospital

(b) Location of private practice:

- I. Urban
- II. Rural

6. Years of Practice:

- a) Below 5 years
- b) 5-10 years
- c) 10-15 years
- d) Above 15 year

7. Approximate number of patients seen per day :

- a) 1-15
- b) 15-45
- c) 45-60
- d) >60

8. Approximate number of MRs visit per week:

- a) Below 5
- b) 5-10
- c) 10-15
- d) 15-20
- e) Above 20

1. Perception of doctors towards future of pharma marketing.

Q.1 Please rate the given sources of your information on a esp..w.r.t. new products /new information five point scale as Highly Preferred/Preferred/Moderate/Not Preferred/Not At All Preferred

Sl.No.	Information Sources	Highly Preferred	Preferred	Moderate	Not Preferred	Not At all Preferred
1.	Medical Representatives					
2.	Mailers from pharmaceutical companies					
3.	Internet					
4.	Medical journals and textbooks					
5.	Conferences and CMEs/Webinars					
6.	Literatures					

7.	Digital communities					
8.	Colleagues/peers/ professional meetings					

Q2. Have you experienced Online product detailing with the Medical reps/Pharma professionals?

a) Yes

b) No

2b) If yes, Did you ever used these application for having virtual meeting with Market Representative?

a) Zoom

b) Webinars

c) Skype

d) Other (e.g. pre -recorded medical content, You tube channels, Medical apps)____

Q2c)

After your online interaction , does your perception towards the company improves/changes	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree

2.Doctors perception towards role of digital application in pharma

Q3. Due to digitalization do you think patients are much less dependent on their doctors for advice?

a) Yes

b) No

Q4. If online platform is the medium then how would you engage your patients.

- a) through apps
- b) health and fitness devices
- c) and online communities
- d) other

Q5.(a) Does online counselling affect the choice and impact of therapy on patients' life?

- a) Yes
- b) No

B) If yes, what is the impact of online counselling?

- a) Less number of patients relying on doctors
- b) Patients' compatibility through online counselling at the case of emergency
- c) No emotional contact
- d) Misunderstanding or misinterpretation of information
- e) Others

Q.6 How can pharmaceutical companies digitally engage with you when promoting a product or brand?

- a) Pre-recorded Detailed Video
- b) Banner ads
- c) Educational content
- d) Power point presentations thru email
- e) Email marketing
- f) Live online product detailing
- g) Social networking sites

Q7. What did you do as a result of your most recent interaction (online and offline) with a pharmaceutical company?

- a) Nothing
- b) Stored or saved information on my device or desk
- c) Send positive or negative feedback directly to the firm

- d) Shared information with friends or colleague
- e) Received an automatic follow-up from the firm
- f) Contacted the firm for a follow-up
- g) Others

Q8. Please rank the problems encountered by you while prescribing.

Problems	
Presence of numerous (me-too) companies	
Presence of numerous (me too) products	
Pressure of MRs to prescribe	
Available of information at digital platforms	
Patient prior knowledge before Doctors visit	

Q9. How did your most recent interaction(online and offline) with a pharmaceutical company affect your Perception of the following?

View	Significant positive change	Small positive change	No change	Small negative change	Significant negative change
Image of the firm					
Your belief on firm's products					
Use of digital channels by the firm					

Q 10. What all aspects are most important to you in any of the ONLINE interaction you have with pharmaceutical company? (please tick the options applicable to you)

- a) The trustworthiness and balance of the information or service
- b) The relevance of the information or service
- c) The simplicity of getting the information or service
- d) The overall integrity with which the company acted

- e) The extent to which the company did what is best for me and my patients, not what was best for itself.
- f) The consistency of the information or service
- g) The speed with which the information or service was provided.
- h) The amount of information
- i) Being able to choose how and when to receive the information or service
- j) Being treated as valued customer
- k) The enjoyability of interaction itself
- l) The extent to which company met my needs
- m) The beauty of the appearance of the information or service

Q 11. What kind of ONLINE information do you most prefer to get from pharmaceutical firms, and what do you actually receive most often?

s.no	Information	Preferred content	Received content
1.	Prescription drug information		
2.	Educational content		
3.	New clinical data		
4.	Medical education		
5.	Latest clinical/medical news		
6.	Clinical trial information		
7.	Disease or symptom information		
8.	Prescription guidelines		
9.	Articles/journals prints		
10.	Case studies		

Q 12. What kind of interaction do you most prefer to have with pharmaceutical firms, and what kind of interaction do you actually have most often?

s.no	Interaction	Preferred channel	Received channel
1.	Face to face meeting with medical rep.		

2.	Online meeting with Medical rep		
3.	Pre recorded Product Detailing by the company		
4.	Physical + Online Meeting by the Pharma professionals (Med Reps)		
5.	Website		
6.	eNewsletter		
7.	Call from a pharma rep.		
8.	Live virtual event		
9	Email from a pharma rep.		
10	Mobile app		

Q13. Please rate on 1-5 point scale the qualities expected in future from a pharmaceutical companies .

Qualities	1	2	3	4	5
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Be research based					
Have effective field staff					
Be socially responsible					
Have a good distribution system					
Be patient friendly					
Provide value addition to practice					
Provide specialty promotion					

Q14. Are you aware of health apps ?

- a) Yes
- b) No

B)If, yes which of the following do you know(please tick the option applicable to you)

Name of the mobile health app	
Samsung health	
Fit bit	
Healthily me	
Fitness challenge	
Nike Fitness App	
Health tracker	
Apple Health	
Yoga and Meditation app	
Google Fit	
MI Fit	
Pedometer	
Calorie counter	

Q15. What should be the Duration of use for Mobile Health apps?

- a) 0-3months
- b) 4-6 months
- c) 7-12 months
- d) 1-5 years

3.Doctors frame of mind towards Artificial Intelligence

Q16. Do you think that Artificial Intelligence has useful application in the medical field?

- a) Strongly agree
- b) Agree
- c) Neither agree nor disagree
- d) Disagree
- e) Strongly disagree

Q17. Do you think that you would always use AI when making Medical decisions in the future?

- a) Always
- b) Often
- c) Occasionally
- d) Never

Q18. In which field of medicines do you think artificial Intelligence will be most useful?

- a) Making a diagnosis
- b) Making treatment decisions
- c) Direct treatment (including surgery)
- d) Biopharmaceutical research and development
- e) Providing medical assistance in underserved areas
- f) Development of social insurance program
- g) Patient counselling and engagement

Q19. What are your concerns about application of AI in medicine?

- a) It is not flexible enough to be applied to every patient
- b) It is difficult to apply to controversial subjects
- c) The low ability to sympathize and consider the emotional well-being of the patient
- d) It is developed by a specialist with little clinical experience in medical practice

Q20. a) Do you think MR's can be replaced by AI services?

- a) Yes
- b) No

b) If yes, Will you prefer any artificial intelligence (AI) services for promoting of drugs by pharmaceutical company?

- a) Yes
- b) No

c) If yes, From the following which AI service you would use instead of MRs
Online application including

- a) infographics application on , pharmacokinetic, pharmacodynamics of drugs
- b) Robots
- c) Fit me bands
- d) Artificial Gadgets (reminder , clocks , calendar)

Q21. Who do you think will be liable for legal problems caused by artificial intelligence?

- a) Doctor in charge
- b) Company that created the artificial intelligence
- c) Patient who consented to follow artificial intelligence's input.
