

DISSERTATION

For The Partial Fulfillment For The Award Of The Degree Of
Master Of Business Administration (MBA) In Hospital And Health
Management



+

ENIRA CONSULTING
(in partnership with ALCHEMIST HOSPITAL, PANCHKULA)

KIRTI

1116

MBA-HM

A STUDY ON PHYSICIAN AND PATIENT PERCEPTION ON AI BASED DIAGNOSIS

Background & Objectives:

- The practice of medicine is changing as new Artificial Intelligence (AI) tools for machine learning develop. Because of rapid developments in computer processing, these AI-based solutions are already improving the accuracy and efficiency of diagnosis and treatment across a wide range of specializations.
- By employing patient data and other information, AI may aid doctors and medical workers in offering more accurate diagnoses and treatment recommendations.
- Furthermore, by analyzing massive amounts of data to provide better preventative care recommendations for patients, AI can help make healthcare more predictive and proactive.
- The goal of this study was to investigate physicians' and patients' perspectives on AI-based diagnosis.



Methodology:

- Comparative and situation analysis of current scenario of AI in healthcare.
- Google form was floated among doctors and their patients.
- The data was analyzed from the responses and recommendation and conclusions were formulated.
- **DURATION OF STUDY:** 1st April 2022 to 1st June 2022





MATERIAL AND METHODS:

- **STUDY DESIGN:** descriptive cross-sectional analytical study (qualitative non-experimental)
- For patient's perception: Sample size will be calculated by the average of total number of patients in 2 months in OPD department. Total number of OPD patients= 191
- For physician's perception: Sample size will be calculated by the total number of doctors sitting for OPD consultations. Total number of doctors who sit for OPD consultations= 47 doctors
- **SAMPLE SIZE FOR PATIENTS** (Confidence Level:95% Margin of Error:5% Population Proportion:50%) Sample size for patients = 128
- **SAMPLE SIZE FOR DOCTORS** (Confidence Level:95% Margin of Error:5% Population Proportion:50%) Sample size for doctors = 42
- **SAMPLING TECHNIQUE:** Convenience sampling
- **DATA COLLECTION PROCEDURE:** google form will be shared with the selected OPD physicians and the administrators. The physicians will be filling out the survey on their own; the administrators will help/get the patient's perception by getting the form filled by them.



STUDY POPULATION

Inclusion criteria:

- ✓ the study will focus on Case studies and technological solutions with are using Artificial Intelligence to carry out medicine focused decisions.
- ✓ All doctors/physicians working at Alchemist Hospital will be included
- ✓ Patients coming for general OPD consultation will be considered

Exclusion criteria:

- ✓ medical decision-making technical solutions which do not fall under AI based domain will be excluded.
- ✓ Front-line staff (nurses and technicians will not be included)
- ✓ IPD patients will not be considered
- ✓ Individuals under the age of 15 will not be considered

ETHICAL CONSIDERATIONS:

Informed consent was taken from each respondent at the start of the form.

AI based Physician-less Diagnosis

For Consumers/Patients

 dh.kirti07@gmail.com (not shared) [Switch account](#) 

* Required

You are invited to take part in a study on AI-based Physician-less Diagnosis: The Future of the Physician's Role and Patients' Perception. The purpose of this research is to better understand patients' and physicians' attitudes on doctor-less diagnosis. Dr. Kirti is doing this research as part of her dissertation project for her MBA in Hospital and Health Management from IIHMR University in Jaipur. Participation in this study is entirely voluntary. Participation in this study will not immediately benefit you, but it will help us understand about your attitudes regarding doctor-less diagnosis using AI. You may skip any questions you do not wish to answer and exit the survey at any moment. Any information you share with us as part of this study will be kept fully secret to the fullest degree permitted by law. • Your personal information will be kept confidential and used only for research purposes. Please keep in mind that you must be 18 or older to take part in this survey. Please contact Dr. Kirti at 9872227647 or kirti.j20@iihmr.in if you have any queries regarding this study. Do you consent to participate in this study?

☒ Yes

☐ No

AI in healthcare- physicians' perception

 dh.kirti07@gmail.com (not shared) [Switch account](#)  Draft saved

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☒ Yes

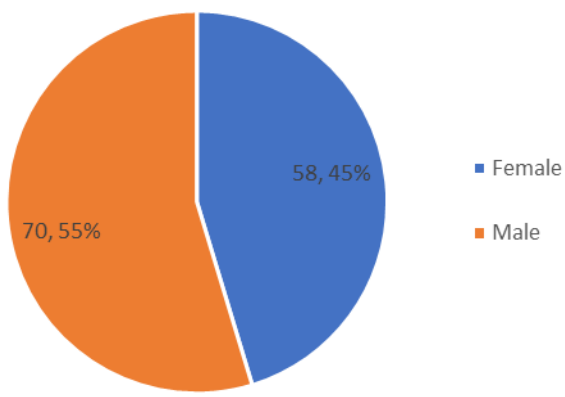
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RESULTS AND FINDINGS

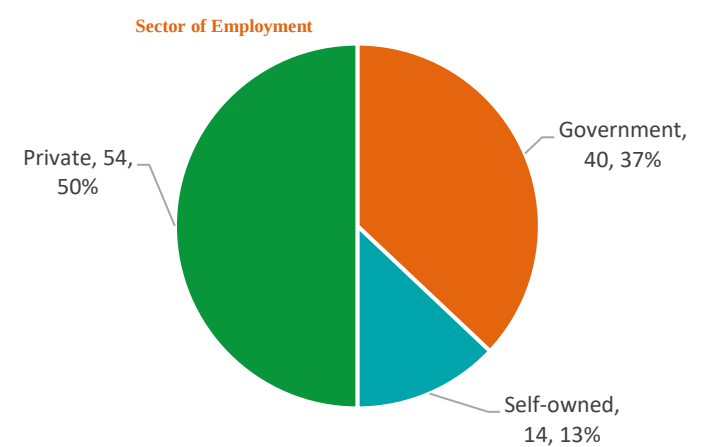
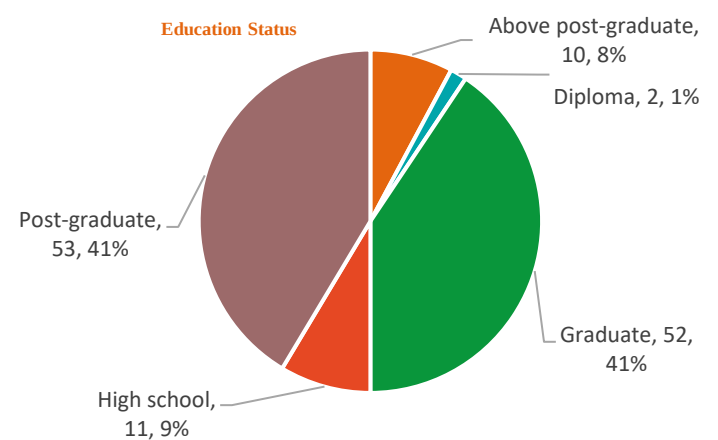
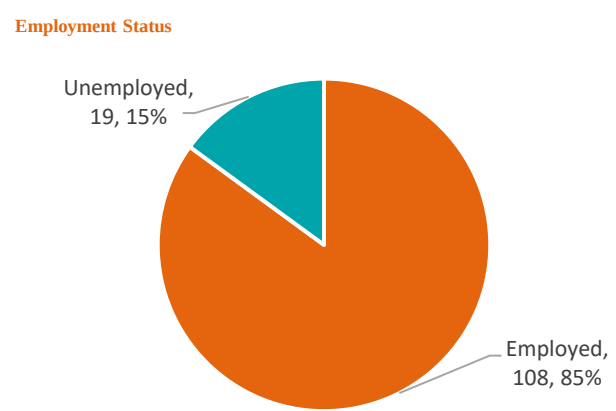
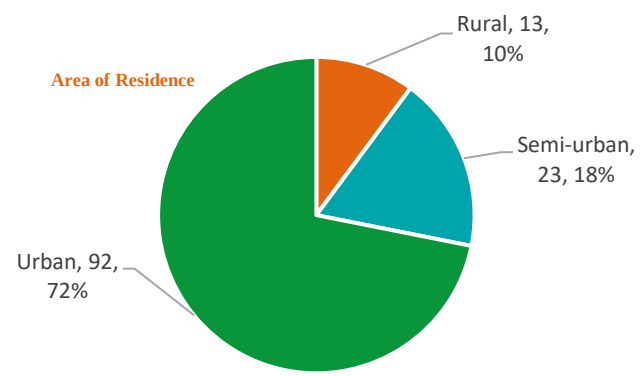
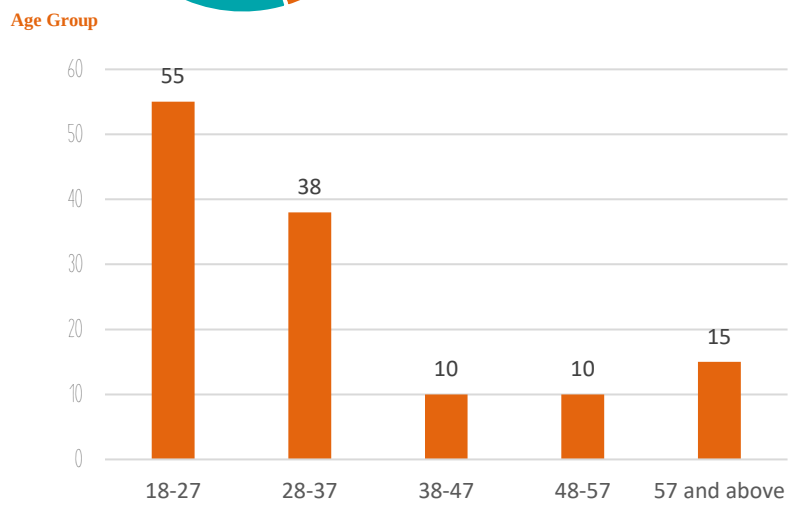
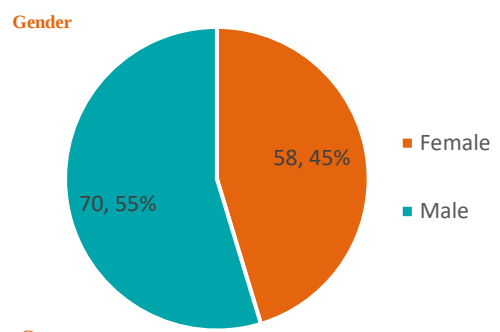
- Results were formulated on the basis of Physicians' and Patients' perception.
- Both their perceptions were analysed separately



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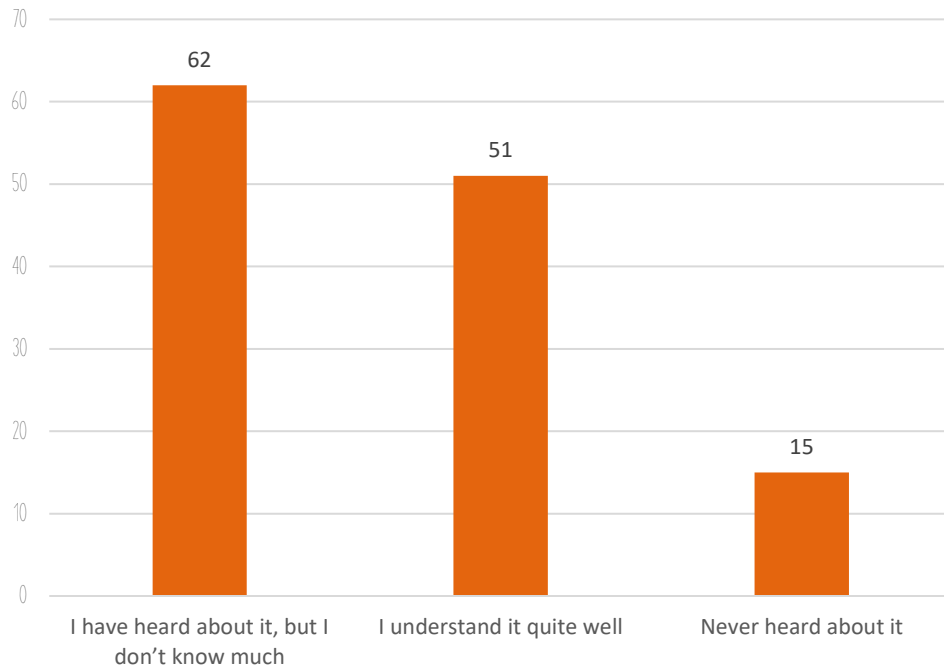


Demographic Details

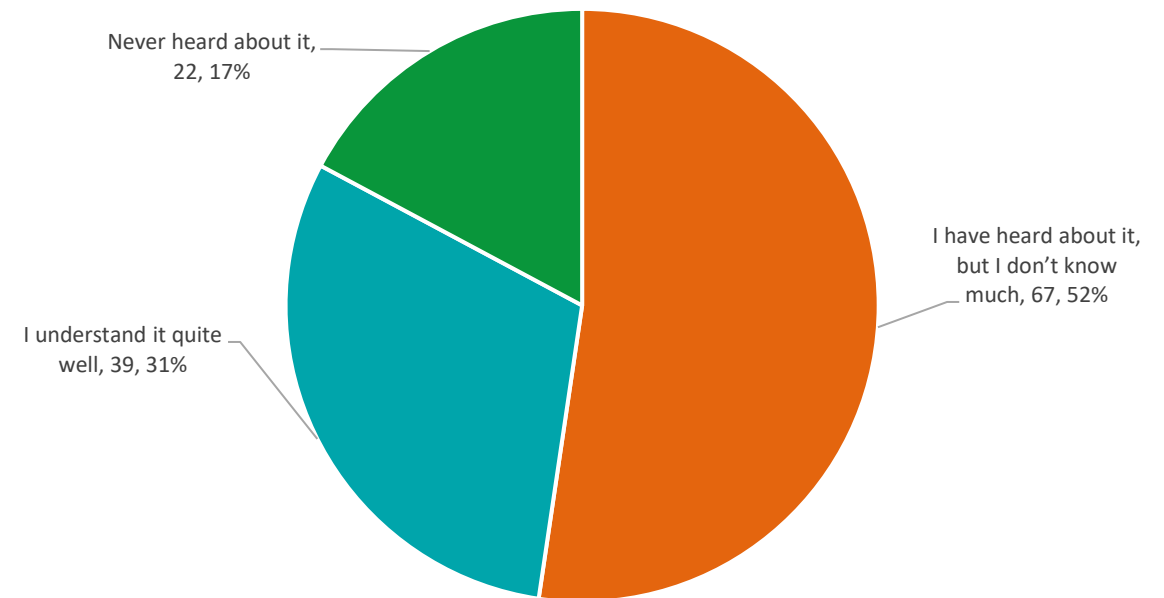


Patients' Perception

Knowledge about AI



Count of "How much do you know about Artificial Intelligence in healthcare?"

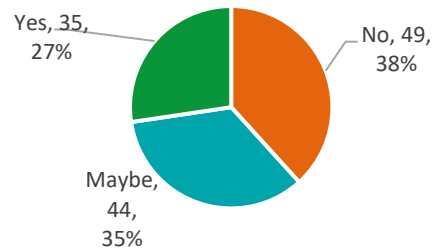


Count of "How much do you know about Machine Learning in healthcare?"

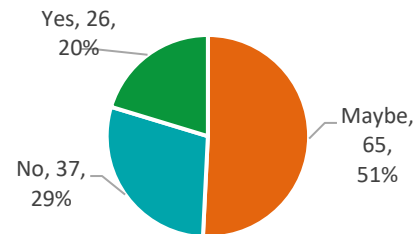
Patients' Perception

Perception about AI in healthcare

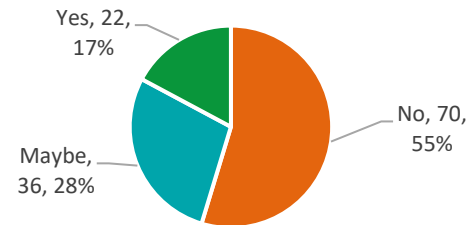
Count of Are you comfortable with the idea of having a doctor-less consultation?



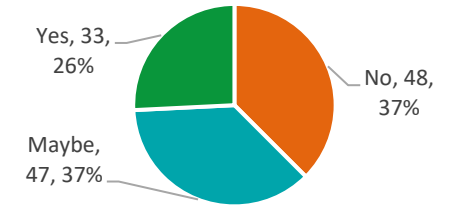
Count of Do you think a diagnosis carried out by an AI is as accurate as a physician?



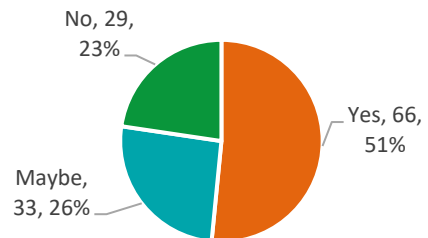
Count of Will you be comfortable with an AI based robot performing a minimal risk surgery on you?



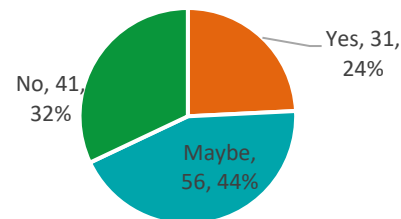
Count of Would you trust an AI/AI-based robot to diagnose and prescribe medicines to you?



Count of Do you trust automated AI based diagnosis of your MRI/CT scan?

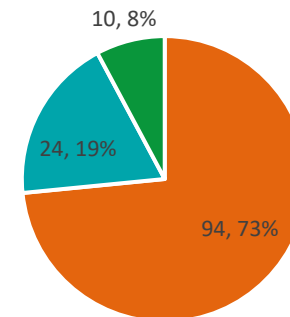


If AI based/robotic diagnosis is more accessible and cheaper than in-person doctor consultation, would you prefer having an AI based doctor-less diagnosis?

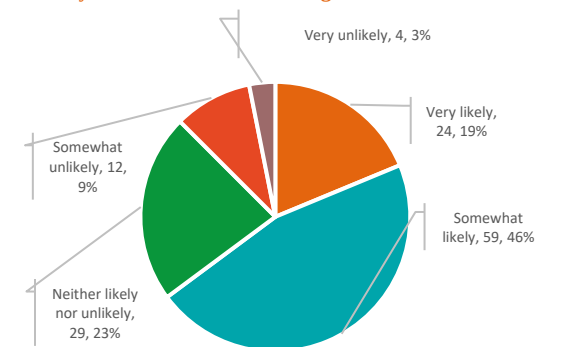


If an AI solution can accurately diagnose cataract via a picture on your smartphone; would you still consult a physician to get it verified from their clinical setup machines, or would you trust the AI based solution for cataract?

- I can trust AI based solution, but I would still go to the doctor to get it verified via the hospital's machines
- I cannot trust AI based smartphone solution
- I would completely trust AI based solution and book an appointment with my specialist



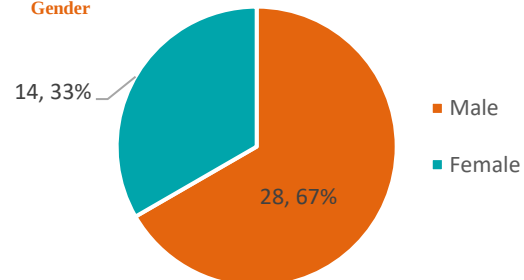
If government comes out with an integrated healthcare diagnostic plan based on AI and Machine learning, will you be comfortable availing the services?



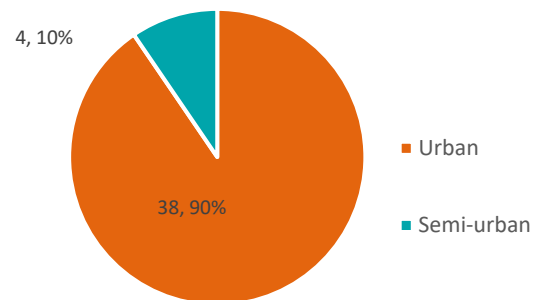
Physicians' Perception

Demographic Details

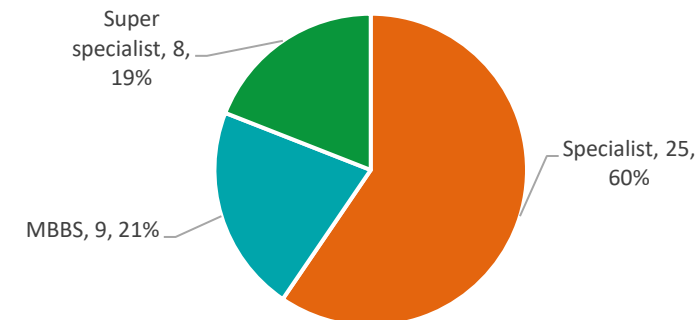
Gender



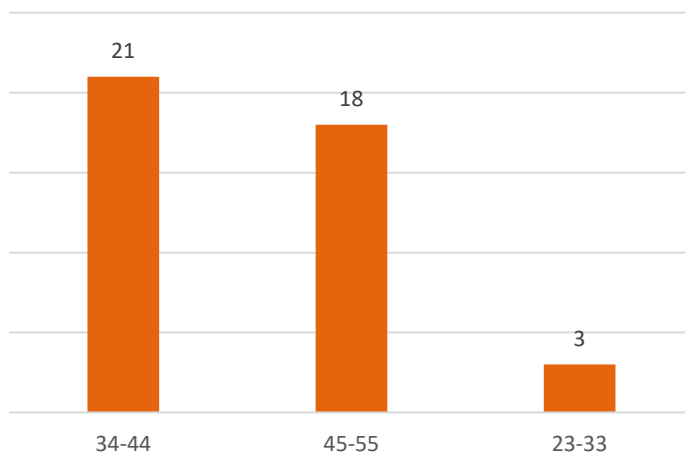
Area of Residence



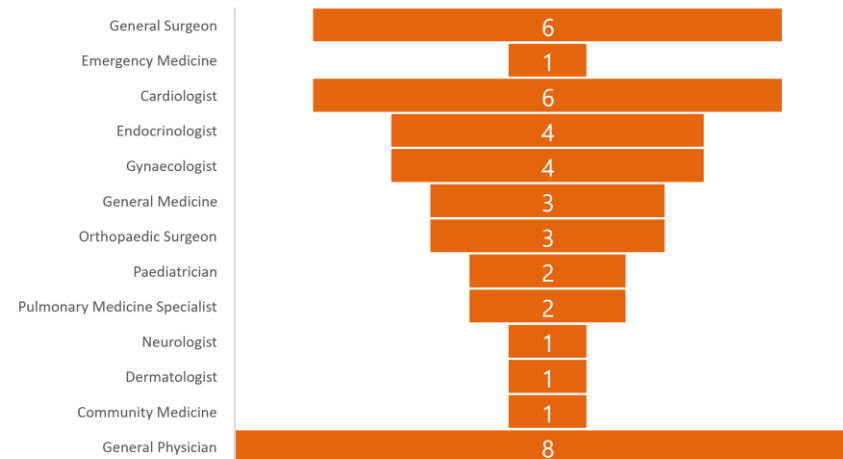
Qualification



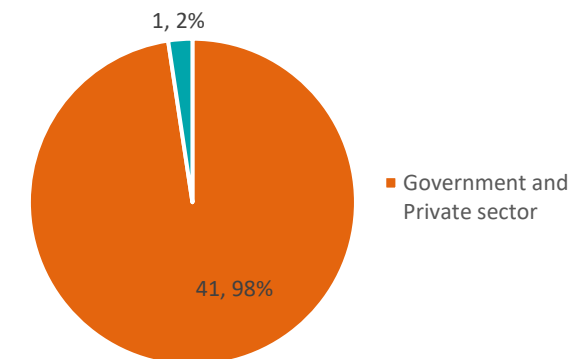
Age Group



Count of Specialties



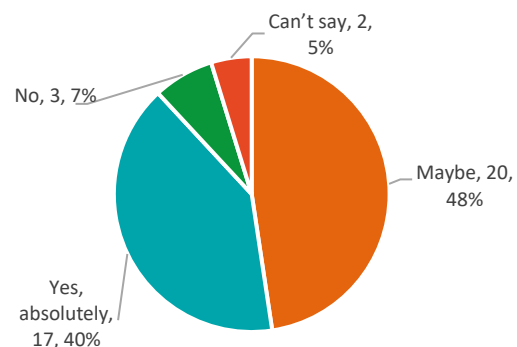
Experience in healthcare sectors:



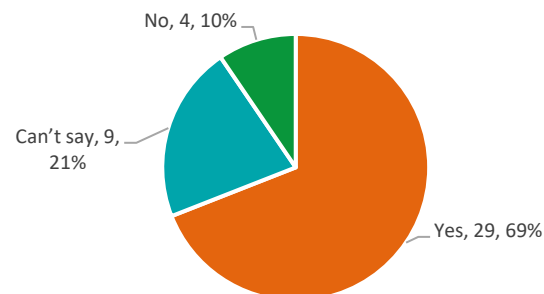
Physicians' Perception

Perception about AI in healthcare

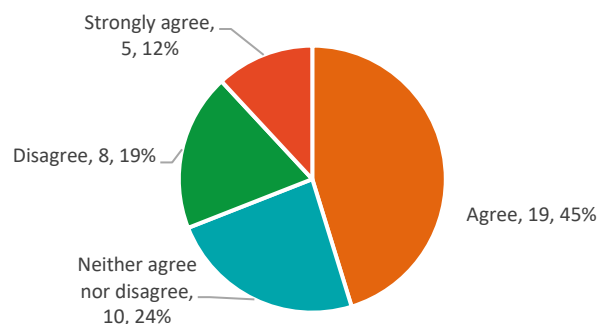
Count of Do you think AI can carry out relative risk assessment better/equivalent to a physician?



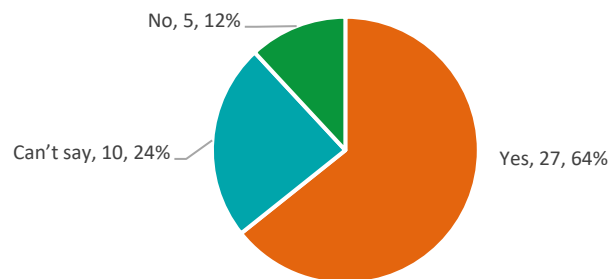
Count of Do you think automation in healthcare via AI will be successful in private sector?



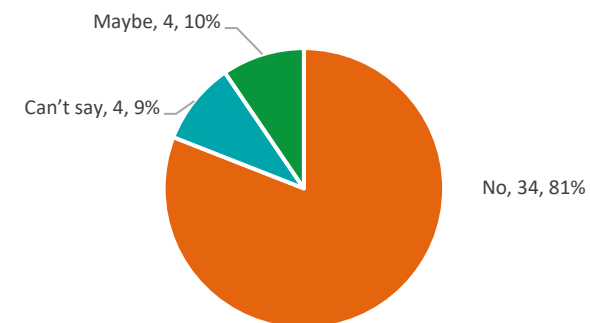
Count of Do you feel patients will be comfortable with the idea of having physician-less diagnosis?



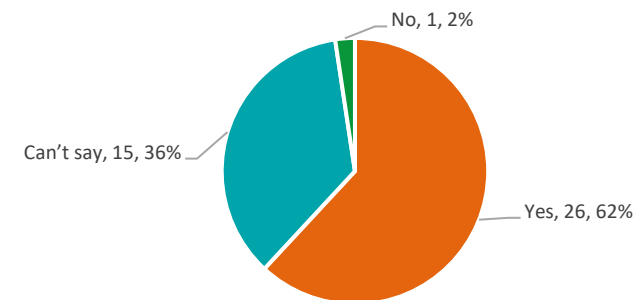
Count of Do you think Automation in healthcare via AI will be successful in government public health sector?



Count of Do you think AI can totally replace Physicians?



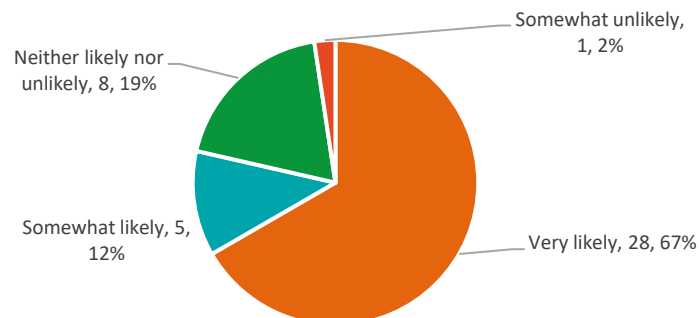
Count of Do you think AI used in Radiodiagnosis is accurate?



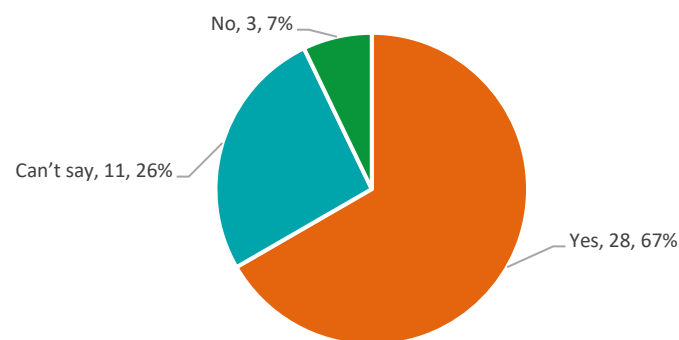
Physicians' Perception

Perception about AI in healthcare

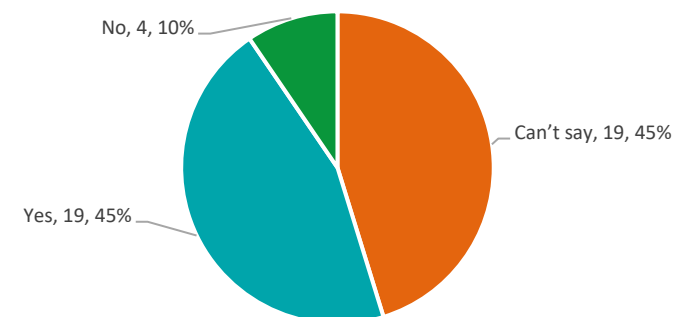
Count of Do you think AI based diagnosis will reduce patient load/burden on the Practitioner?



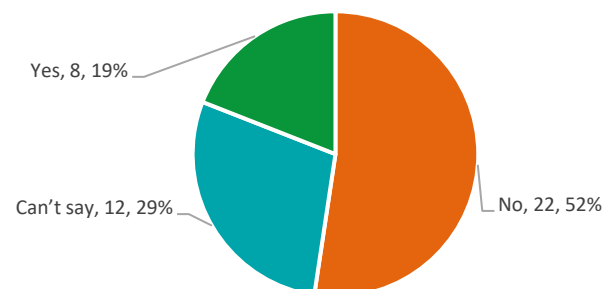
Count of Do you think AI used in Diagnostics (lab investigations) is accurate?



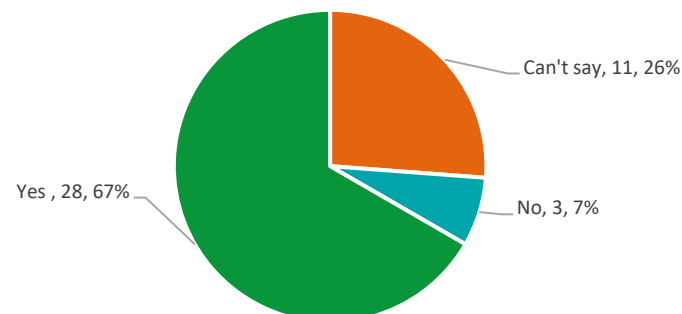
Count of Do you think AI based robotic surgeries for minor superficial procedures are safe?



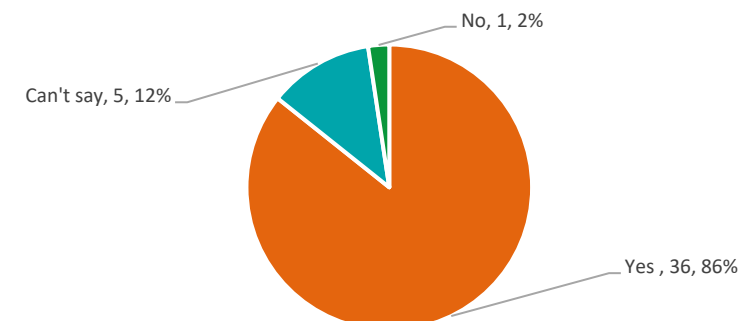
Count of Do you think AI based robotic Minimal intrusive surgeries can replace General Surgeons?



Count of Do you think AI used in ophthalmology diagnosis (cataract detection/diagnosing retinopathies) is accurate?



Count of Do you feel that AI and automation in health will make healthcare more affordable and accessible for patients in the future?



Comments on: What do you think is the future of physicians once AI in healthcare becomes mainstream?

- “AI can assist physicians but can never replace them.” – *General Physician*
- “AI can really help with the overburdening of healthcare staff by selective profiling of patients. In my opinion selective profiling can help reduce the waiting time in OPDs as well.” – *General Surgeon*
- “Empathy is something that only physicians can provide during real in person consultations. AI need to work on that aspect as well as strengthen data collection— as it is needed for effective machine learning and relative risk assessment.” – *Neurologist*
- “I feel it would be great to monitor and evaluate services.” – *Community Medicine Specialist*
- “AI cannot replace physicians, but it surely can assist them. In my opinion AI can be successful only in terms of basic consultation; it cannot perform surgeries the way a general/specialist surgeon can.” – *General Physician*
- “AI innovations in healthcare cannot substitute human doctors. They just enhance what they already can do by taking on certain tasks, but physicians will always be the first priority for patients to get consultation from.” – *Pulmonary Medicine Specialist*
- “The promise of artificial intelligence in medicine is to provide composite, panoramic views of individuals’ medical data; to improve decision making; to avoid errors such as misdiagnosis and unnecessary procedures; to help in the ordering and interpretation of appropriate tests; and to recommend treatment. If this is what AI has to offer, then working towards it will make healthcare more accessible for everyone.” – *Paediatrician*

FINDINGS OF RESEARCH

1. Patients' Perception

- ❖ As majority of the respondents when asked about their knowledge and awareness regarding AI responded that they have heard about Artificial Intelligence and Machine Learning, but they don't know much about the concept, this points towards the lack of awareness and conceptual knowledge about AI & Machine Learning, and its applications among common people.
- ❖ As majority of the respondents were not comfortable with doctor-less consultations. This throws light towards the perception of patients that they prefer in-person physician consultations than AI based robotic consultations. Along with this majority of the respondents clicked on "maybe", while only 20% of the respondents think that the diagnosis carried out by AI is as accurate as a physician. Apart from this when asked out AI based diagnosis, 37% of respondents were not comfortable with this situation. Same percentage (37%) of respondents were skeptical about the situation. Only a fraction of 26% of respondents were comfortable with an AI based robot to diagnose and prescribe medicines to them. This shows that people do not trust AI based diagnosis, they prefer in-person physician consultations. This shows that people are skeptical about their trust in AI based diagnosis.
- ❖ As majority (70%) of the respondents were not comfortable with the idea of AI based robot performing minimal risk surgeries, 28% were skeptical about the same, while only 17% of the respondents were comfortable with AI based robotic surgeries. This shows patients' negative perception towards AI based robot performing surgeries on them even if the procedure is minor one, patients prefer that a surgeon/qualified physician performs it on them.
- ❖ As majority (51%) of the respondents were comfortable with AI based radio-diagnosis. 23% of the respondents were skeptical about the situation, while 23% of the respondents were not comfortable with AI based radio-diagnosis. This shows that majority of people trust AI when it comes to radiodiagnosis. Although majority of people trust AI based radiodiagnosis but still a considerable number of people are still skeptical towards it.
- ❖ As majority (73%) of the respondents gave a positive response towards AI based diagnosis of cataract through smartphone, trusting the diagnosis of it. This shows that people trust AI based cataract detection. People have a positive perception when it comes to AI based diagnosis of cataract.
- ❖ Majority (44%) of the respondents clicked on "maybe"; while only 24% thought that AI based consultation will make healthcare more affordable and accessible for them. 32% of the respondents stated that AI based consultation cannot make healthcare more affordable and accessible for them. This shows that people think AI intervention cannot make healthcare more accessible for them.
- ❖ When asked about government-launched AI based solution, majority (65%) of the respondents will feel comfortable availing AI based healthcare services provided by the government. This shows that majority of people have a positive perception towards government-launched AI based intervention, although a considerable number of people are skeptical towards it also.

FINDINGS OF RESEARCH

2. Physicians' Perception

- ❖ As majority of the respondents clicked on “Maybe”. A considerable number (40%) of the respondents had a positive response to it saying that “yes, absolutely”—AI can carry out relative risk assessment better/equivalent to a physician. This implies that physicians have a positive perception towards AI performing relative risk assessment.
- ❖ As majority (57%) of the respondents are in favor of the statement that patients will feel comfortable with physician-less diagnosis, while 19% totally disagree with that. A considerable number of respondents had a neutral reaction towards the same. This shows physicians' positive perception towards doctor-less diagnosis. Although majority of doctors had a positive outlook towards it, there is still a considerable number of respondents who are skeptical towards the same.
- ❖ As majority of the respondents clicked on “No”—AI cannot replace physicians. This shows physicians' perception that though AI can assist physicians but for sure cannot replace them.
- ❖ As majority (69%) of the respondents feel that automation with AI in healthcare will be successful in private sector. Apart from this, majority (64%) of the respondents feel that automation with AI in healthcare will be successful in government sector. This shows that physicians' perception that automation in healthcare via AI intervention will be successful in government sector as well as private sectors.
- ❖ Majority (62%) of physicians feel that AI used in radiodiagnosis is accurate, while 36% are skeptical about it. Apart from this majority (67%) of the physicians feel that AI based diagnostics (lab investigations) are accurate. Along with this around 67% of the physicians feel that AI based diagnostics (lab investigations) are accurate. This shows positive perception towards AI based radiodiagnosis, AI based lab diagnosis and AI based ophthalmology diagnosis.
- ❖ Physicians' perception shows positive reaction towards AI based robotic surgeries, although a considerable number had neutral reaction towards the same. When asked about physicians' perception on replacement of general surgeons by AI based robots, majority (52%) of the respondents feel that general surgeons cannot be replaced by AI based robots. This implies that physicians feel that AI can assist in surgeries but cannot entirely replace general physicians.
- ❖ As majority (79%) of the respondents feel that AI in healthcare can effectively reduce patient burden on physicians. This shows positive perception towards AI based diagnosis when it comes to reducing patient load/burden and assisting physicians.
- ❖ Majority (86%) of the respondents feel that automation in AI will make healthcare more accessible and affordable for patients in future. This shows that physicians think AI intervention in healthcare will for sure make healthcare more accessible and affordable for patients.

LIMITATIONS OF STUDY

- All the specialties of physicians/specialists were not covered while conducting this research which may lead to some bias in the results.
- Majority of the physicians who responded were under 55 years of age, perception of senior physicians could not be gathered.
- Most of the physicians and patients who responded to the survey resided in urban and semi-urban areas. Perception of people coming from rural areas were not studied.
- Perception of people who did not have a smartphone were not studied, as the survey was based out of a google form.

CONCLUSION

This study was focused on the perception of patients and physicians towards AI in healthcare. Patients had an overall neutral to negative perception towards AI in healthcare while Physicians had an overall positive to neutral perception towards the same.

RECOMMENDATIONS

- Awareness regarding Artificial Intelligence and Machine Learning should be increased. Applications of AI & ML in day-to-day life especially in terms of health monitoring and patient care should be talked about more.
- People have a perception that AI based diagnosis and treatment aren't safe, social media campaigns should be carried out highlighting patient safety, data security and medical accuracy associated with AI in healthcare.
- Many private companies are making AI based healthcare products in the Indian market, integration with NDHM's sandbox can help revolutionizing healthcare in India. This intervention can be highly successful as majority of people had a positive perception towards government-launched AI based healthcare intervention. Apart from this majority of the physicians also feel that AI based intervention will be highly successful in government public health sector.

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THANK YOU!

