Original Article

FINAL YEAR BDS STUDENT PERCEPTION OF ARTIFICIAL INTELLIGENCE USE IN DENTAL PRACTICE

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ABSTRACT

***Background*:** Modern technology makes everything accessible and easy. In our daily life, we use lots of artificial intelligence. Our modern dentistry also uses lots of new technology

***Methods*:** A total of 26 final-year BDS students of Marks Medical College (Dental Unit) were selected purposively and six respondents were selected among them by simple random sampling method for a focus group discussion session in June 2022. The study implemented one qualitative method: a focus group discussion (FGD) among respondents. Semi-structured interview guidelines study adhered to the consolidated reporting criteria for qualitative studies (COREQ) developed for the FGD

***Results*:** Positive comments included the reduced workload, quick calculations, less radiation exposure, ease of choosing a treatment plan, and ease of motivating patients. On the negative side, it was noted that it was expensive, required additional funding for setup, wasn't available, and required skilled labor to run, which is not readily available

Conclusion: It is encouraging that data-driven and robotic technology is becoming more prevalent in modern dentistry. AI and related advancements are becoming more common and used in healthcare. Dental surgeons should be more knowledgeable to use this technology.

JOPSOM 2022; 41(2): 57-61

https://doi.org/10.3329/jopsom.v41i1.66643

Keywords: Artificial intelligence, Dental student, Perception

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INTRODUCTION

Modern technology makes everything accessible and easy. Therefore, all difficult and intricate tasks are simple to complete. Artificial intelligence refers to machines that can think, solve problems, learn, and make plans.[1] In our daily life, we use lots of artificial intelligence. We use it but cannot recognize that this is artificial intellect because now it's a part of our life. Like, as social media, web searches, stores and services, autonomous vehicles, the Uber app, banking, agriculture, and military activities. They followed the coding scheme. It is a particular instruction language that the machine can understand.[2] Our modern dentistry also uses lots of new technology. Like- as CBCT (Cone-beam computed tomography systems), three-dimensional (3D) virtual images for surgical sight, computer-based technologies including VR and AR simulators, CAD/CAM systems, etc. To know the perception of using AI of final year BDS students was the main goal of the study.[3]

METHODS

A total of 26 final year BDS students of Marks Medical College (Dental Unit) were selected purposively and six respondents were selected among them by simple random sampling method for a focus group discussion session in June 2022. Verbal consent was taken from the Principal of that College. The respondents will become

doctors after completing (one and half year) the final year of the BDS course. So, it's very important to know all technological knowledge about dentistry. The study implemented one qualitative method: that is FGD means focus group discussion among respondents. The consolidated reporting standards for qualitative studies (COREQ)[4] defined for the FGD were followed in the semi-structured interview study, which was focused on gathering newer technological data, the usage of AI, and potential dental results in the future. The interview was taken by the researcher herself and she was a master's degree holder in the public health field. The author created interview tips for the various TDF[5] (Theoretical Areas Framework) domains that concern's benefits, drawbacks, and difficulties of AI in Bangladesh. Applications of AI in dentistry can be categorized into diagnostics, decision-making, treatment planning, and treatment result prediction. The most well-liked application of AI in dentistry is diagnosis.[6] Knowledge, advantages, social/professional roles, and affiliations, capacities beliefs, objectives, memory, action, and decision-making processes, environmental context and resources, social influences, emotions, and behavioral control are only a few examples. There was at least one question for each domain. For publication, themes and quotations were translated into English (Table-1).

Tab: 1. The question gird's frame

1. Do you know about AI?
2. How can we use AI in dental practice?
3. What effect may doctors have on these modifications?
4. Are imaging physicians' careers evolving?
5. Do doctors need further training?
6. How does AI affect the patient-doctor relationship?
7. AI can assist with research projects that use health data. How do you feel?
8. How can AI be used to prevent crime?
9. Do you consider any additional moral questions?
10. Are there any more adjustments that would be required to get ready for AI?
11. What are the challenges in terms of responsibilities that AI could give rise to (for the doctors)?

RESULTS

BDS students studying in final year participated in this study. Where three respondents were female and three respondents were male. Respondents' statements were collected, then classified them by the TDF. The themes were then divided into categories such as hurdles, need for facilitators, and opposing themes (Table-2).

Table: 2 Summary of the perception of AI by category

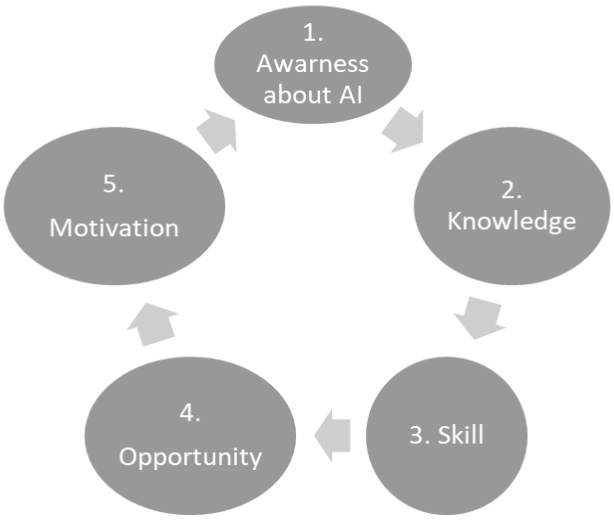
Advantages	Disadvantages	Need to improve
1. Reduce workload 2. Safe time, 3. Calculating data within a short period, 4. Less radiation exposure, 5. Easy to decide treatment plan, 6. Easy to motivate patient	1. Costly, 2. Need extra capital for setup, 3. Not available, 4. Need skilled manpower to operate.	1. Knowledge of the dentist 2. knowledge of the ancillaries 3. Easy bank loan. 4. Training programs should arrange by the government to build skilled manpower.

Conflicts are-

1. Reduce job availability

There are 6 advantages (reduce workload, safe time, calculating data within short a period, less radiation exposure, easy-to-decide treatment plan, easily motivate patient), 4 disadvantages (costly, need extra capital for setup, not available, need skilled manpower to operate), 4 points of need to improve (knowledge of the dentist, knowledge of the ancillaries, easy bank loan, a training program should arrange from the government to build skill manpower and one conflicts (reduce job availability) was detected. The respondents agreed that the use of AI could improve by (Fig-1)

Figure 1: Way to improvement about Artificial Intelligence (AI)



Awareness and knowledge can make a dental surgeon's skills then he/she can motivate himself for further progress. One of the participants told that

"AI is time-saving but costly to use. So, Government can help us to provide the machine and skilled manpower."

Another participant from the group also mentioned that

"We have an overcrowded population in our country. Use of AI can cause loss of job for several people."

The third person said, *"Making treatment plans is now very easy to use AI".*

Then another one also focused on the availability of AI everywhere.

DISCUSSION

Applications of AI are being used in dentistry; shortly, both those who supply and receive dental treatment may have to deal with AI[7]. Our study's objective was to evaluate the Perception of AI of the Final Year BDS students. A Qualitative study was conducted with 26 BDS final year students and from them, six respondents were selected by simple random sampling methods of Marks medical college (dental unit), Bangladesh. Overall, in Table 1, we found 6 Positive feedbacks, 4 demerits, 4 options identified to need to improve, and one conflict mentioned by the respondents. The ability to generate an automated diagnostic report after interacting with AI discoveries was seen from the oral surgeon's perspective as a helpful enabler. interaction with other medical specialists. Second, both parties involved anticipated AI to improve diagnostic precision. Patients, especially those who had prior experience with invasive dental procedures, had expectations that were more pronounced. The identified enablers are in line with those discovered for radiology applications of AI, such as the work in.[8] In this study, the respondents also focus on the same things under the point of advantages to use AI. The complexity of the mechanism, setup costs, huge data requirements for training and precision, and the challenge of accurately diagnosing unusual diseases or disorders are some of the limitations of AI, according to other sources.[9] And in this study the disadvantages and how to improve the situation, respondents mentioned that the cost of using AI may reduce with the help of the policy maker of government.

Generating knowledge could help dental surgeons to motivate themselves to use AI. In other research, the importance of reviewing or confirming AI findings and reliability as well as the value of being aware of the core AI concepts, potentials, and limitations were highlighted.[10] In table:2, The respondents also focused on the use of AI can increase raising awareness, knowledge, skill, opportunity, and motivation of dental surgeons. Another article also mentioned that R/AI was unfamiliar to the majority of dentists. Although dentists had a favorable opinion of R/AI, its use and applications were very limited due to a lack of information and understanding. It will be important to raise awareness of this idea going forward as it could improve the effectiveness and efficiency of treatment.[11]The usage of AI and associated advancements is growing, and they are beginning to be used in healthcare.[12]

CONCLUSION

It is well known that data-driven and robotic technology is becoming more prevalent in modern dentistry. It's time to educate future doctors about dental health-related technology to make improvements.

RECOMMENDATION

Advance health-related artificial intelligence guidelines may include the final year BDS curriculum in Bangladesh.

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