Attitude and Motivation of Medical Professors in the Use of Virtual Simulation Technology of Radiotherapy in Clinical Teaching Context in Chongqing Medical University

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Abstract

Virtual simulation technology of radiotherapy has completely changed the way we teach and learn. In the context of medical school education, the technology bridges the gap between abstract knowledge and ordinary life. Technology advances the possibilities available to mankind and are essential to medical professors in the teaching. However, educators are faced with the challenge of guiding students through this transition and ensuring they don't lose valuable time using their devices. The rise of technology in learning has also carried some disadvantages with it, some of which might be overlooked. This study aimed to determine the attitude and motivation of medical professors to adopt virtual simulation technology of radiotherapy in clinical teaching context. Descriptive statistics, t-test analysis, one-way ANOVA, Pearson-r correlation, and chi-squared test were used in this study. It is recommended to upskill the technological and pedagogical knowledge and skills of faculty member, crucial especially in the context of a post-pandemic education.

Introduction

In the field of medicine, education technology allows more equality to teach advanced skills to people than before (Goh & Sandars, 2020). Medicine technology allows better diagnosis and better treatment like wise better teaching of the medicine to the young minds. Technology can help medical students learn and understand the material, and can also be used as a tool for communication and research. Technology is a tool that opens up a variety of instructional techniques and proficiency opportunities of medical professors imparting knowledge and skills. Hence, in the context of medical school education, virtual simulation technology of radiotherapy bridges the gap between abstract knowledge and ordinary life. Technology advances the possibilities available to mankind and are essential to medical professors in the teaching and learning in clinical context.

Technology in the field of teaching and medicine has been confronted by many challenges, issues, and gaps, reflected on the international and local scenario. The traditional "Chalk-and-talk" teaching mode is no longer effective in catching kids' attention. We cannot deny that high-tech products can exactly attract learners' attention in class. Tools like tablets, video-making apps and VR can certainly attract their eyeballs. But if their minds are not even in class, you cannot teach anything for sure.

Experience wise, that prior to adopting technology, likewise, an inquiry about medical professors' motivation to use technology is also vital. Technology has led to the rise of a lot of devices that can access the internet. Medical professors that use these devices for teaching and learning are having a hard time trying to focus most of the time. So, sometimes the medical students may find themselves trying to access other components of the device instead of the pedagogical experience.

With the above background issues, concerns, and challenges, hence, this study was conceptualized to address the attitude and their motivation of medical professors in using virtual simulation technology of radiotherapy in the classroom. This inquiry is based on Ramlatchan's Technology Learning Theory (2019) and Human Resource Management Theory by Raymond Miles as cited by Rafiq et. al. (2020).

Research Design And Methodology

Research Design:

This study centered on the attitude and motivational adoption of the medical professor in the use of virtual simulation technology of radiotherapy in medical education context in Chongqing Medical University. The quantitative method defined by Apuke (2021) was chosen to determine significant relationships and differences established in the statement of the problems.

Moreover, this investigation particularly utilized descriptive-correlational research design. As used by the researcher in the study, a current status of demographic profile of the respondents, medical professors' attitudes and motivation to the use of virtual simulation technology of radiotherapy, were inquired. A correlation was attempted to be established either accepting and rejecting the hypothesis stated.

Population And Sampling

The respondents of this investigation consisted of 143 medical professors from Chongqing Medical University for the first semestral term of 2022–2023 ,selected through convenience sampling method, in the Peoples Republic of China.

Research Instrument

This study adopted and modified the research instrument of McInerney et. al. (2019), Ghanizadeh et. al. (2019), and Olasoji et. al. (2019) scaling the leverage attitude of medical professors in the use of technology in teaching. And this study adopted and modified the research instrument of Sharma and Srivastava (2019), Paudel (2020), and Mahdum et. al. (2019) scaling the leverage of motivation to adopt technology of the medical professors.

Furthermore, the research instrument was divided into three separate parts, to provide convenience and simplicity of utilization. The first part provides the demographic profile of the profile of the medical professors. The second part provides the attitude of medical professors in the use of virtual simulation technology of radiotherapy and utilizes the following Likert Scale:

Scale	Range	Verbal Description
4	3.51–4.50	Very Positive
3	2.51–3.50	Positive
2	1.51–2.50	Negative
1	1.00-1.50	Very Negative

While the third part was for the motivation to adopt virtual simulation technology of radiotherapy of the medical professors. The survey questionnaire utilizes the following Likert Scale:

Scale	Range	Verbal Description
4	3.51–4.50	Highly Motivated
3	2.51–3.50	Motivated
2	1.51–2.50	Unmotivated
1	1.00-1.50	Highly Unmotivated

Statistical Treatment Of Data

To assess the demographic profile of the respondents, simple percentage and frequency were utilized.

Weighted mean was employed, to determine the medical professors' attitudes towards the use of virtual simulation technology of radiotherapy in the clinical teaching environment and compute the level of motivation to adopt it .

T-test and one-way ANOVA were utilized, to establish the significant difference in attitude and the significant difference in the motivations of medical professors to the use of virtual simulation technology of radiotherapy in the clinical teaching context, when grouped according to their profile,

To formulate the significant relationship between the demographic profile and attitudes of the respondents towards the use of technology in the clinical teaching environment, Pearson correlation coefficient (r) and Chi-Squared test of association were employed.

To compute the significant relationship between the medical professors' attitudes towards the use of technology in the clinical teaching environment and the medical professors' motivation to adopt technology, Pearson correlation coefficient (r) was employed.

Result:

1. Demographic profile

Table No. 1

The profile of the respondents in terms of age, sex, and length of service

Age	Frequency	Percent
21 to 30	11	7.69
31 to 40	50	34.97
41 to 50	39	27.27
51 and above	43	30.07
Total	**143**	**100.00**
Sex	**Frequency**	**Percentage**
Male	70	48.95
Female	73	51.05
Total	**143**	**100.00**
Length of Service	**Frequency**	**Percent**
1 to 10	38	26.57
11 to 20	39	27.27
21 to 30	55	38.46
31 to 40	11	7.69
Total	**143**	**100.00**

The table shows that the respondents with the age ranging from 31 to 40 years old ranked first while the respondents with age ranging from 21 to 30 years old ranked last. In terms of sex, respondents from the female group dominated the sample while male group is the minority. Moreover, the respondents with 21 to 30 years of service in the institution ranked first while respondents with 31 to 40 years of service ranked last.

This finding means that medical professors in Chongqing Medical University are dominated by female. In addition, medical professors are coming from age 31 to 40 years old group and with 21 to 30 years of service in the institution. It can be inferred that the medical profession highly values the seniority in their field.

2. Attitude towards the use of virtual simulation technology of radiotherapy

Table No. 2

The level of medical professors' attitude towards the use of virtual simulation technology of radiotherapy in the clinical teaching context with respect to pedagogy

PEDAGOGY	Mean	SD	Rank
1.The use of virtual simulation technology of radiotherapy can facilitate student-centered learning.	3.70	0.52	1
2.The use of virtual simulation technology of radiotherapy provides an opportunity to improve the quality of my teaching.	3.67	0.49	4
3.The use of virtual simulation technology of radiotherapy can develop teacher's pedagogical abilities in the art of questioning.	3.65	0.52	5
4.The use of virtual simulation technology of radiotherapy has more effective role in medical education in class discussions.	3.69	0.49	2
5.The use of virtual simulation technology of radiotherapy has a complementary role in medical education particularly in classroom dynamics.	3.68	0.54	3
Weighted Mean	3.68	0.51	

It can be deduced from the table that item no. 1 “The use of virtual simulation technology of radiotherapy can facilitate student-centered learning” ranked first while item no. 5 “The use of virtual simulation technology of radiotherapy can develop teacher’s pedagogical abilities in the art of questioning” ranked last. With a weighted mean of 3.68, the level of medical professors’ attitude towards the use of it in the clinical teaching context with respect to pedagogy if at “Very Positive” level.

This means that the medical professors’ attitude towards the use virtual simulation technology of radiotherapy with respect to pedagogy is at very positive level. Medical professors believe that it can facilitate learning inside their class. In addition, respondents also believe that with the use of it, their pedagogical skills improve as well.

Table No. 3

The level of medical professors’ attitude towards the use of virtual simulation technology of radiotherapy in the clinical teaching context with respect to content

CONTENT	Mean	SD	Rank
1.The use of virtual simulation technology of radiotherapy can prepare students for their lessons.	3.62	0.54	5
2.The use of virtual simulation technology of radiotherapy can improve students' understanding of the lessons.	3.68	0.51	2
3.The use of virtual simulation technology of radiotherapy provides an opportunity to follow the latest information.	3.65	0.53	4
4.The use of virtual simulation technology of radiotherapy can provide opportunities to study new things.	3.66	0.53	3
5.The use of virtual simulation technology of radiotherapy can make learning more meaningful.	3.69	0.49	1
Weighted Mean	3.66	0.52	

It can be inferred from the table that item no. 5 “The use of virtual simulation technology of radiotherapy can make learning more meaningful” ranked first while item no. 1 “The use of virtual simulation technology of radiotherapy can prepare students for their lessons” ranked last. All in all, the level of medical professors’ attitude towards the use of it in the clinical teaching context with respect to content is 3.66 with verbal interpretation of “Very Positive”.

This means that the level of medical professors’ attitude towards the use of technology with respect to content is at “Very Positive” level. Medical professors believe that the use of virtual simulation technology of radiotherapy in the classroom will be beneficial for both the medical instructors and the students. Using this technology inside the class provides opportunities for the students to learn updated content in the field of medicine thus, improving the understanding of lessons.

Table No. 4

The level of medical professors’ attitude towards the use of virtual simulation technology of radiotherapy in the clinical teaching context with respect to assessment

ASSESSMENT	Mean	SD	Rank
1.The use of ICT can contribute to making students work more actively and problem-based.	3.69	0.50	3
2.The use of virtual simulation technology of radiotherapy can inspire and make students able to express themselves.	3.66	0.52	4.5
3.The use of virtual simulation technology of radiotherapy can improve the quality of student learning and accomplish tasks and assignments.	3.66	0.57	4.5
4.The use of virtual simulation technology of radiotherapy can increase self confidence of students to answer quizzes and exams.	3.70	0.49	2
5.The use of technology encourages students to submit their assignments.	3.71	0.50	1
Weighted Mean	3.68	0.51	

It can be deduced from the table from the table that item no. 5 “The use of virtual simulation technology of radiotherapy encourages students to submit their assignments” ranked first while item no. 2 “The use of virtual simulation technology of radiotherapy can inspire and make students able to express themselves” and item no. 3 “The use of virtual simulation technology of radiotherapy can improve the quality of student learning and accomplish tasks and assignments” tied at the bottom of the rank list. All in all, the level of medical professors’ attitude towards the use of virtual simulation technology of radiotherapy in the clinical teaching context with respect to assessment is 3.68 with a verbal interpretation of “Very Positive”.

This means that the level of medical professors’ attitude towards the use of it with respect to assessment is at a very positive level. Medical professors view the use of it in assessment in their class as impactful. Moreover, using it in classroom-based assessment promotes active students’ participation in the feedback mechanisms. It also improves the quality of outputs that the students are submitting, thus, making them confident in their submitted outputs in class.

3. Motivation to adopt virtual simulation technology of radiotherapy

Table No. 5

The level of medical professors’ motivation to adopt virtual simulation technology of radiotherapy with respect to value belief

VALUE BELIEF	Mean	SD	Rank
1. I believe that use of virtual simulation technology of radiotherapy in teaching will help my students.	3.68	0.51	3
2. I believe that virtual simulation technology of radiotherapy integration will positively affect my students.	3.73	0.53	1
3. I believe that use of virtual simulation technology of radiotherapy will improve my teaching.	3.65	0.60	4
4. I believe if I use virtual simulation technology of radiotherapy in my teaching it will help me in my future growth.	3.62	0.60	5
5. I believe that using virtual simulation technology of radiotherapy improves the quality of my teaching.	3.71	0.58	2
Weighted Mean	3.68	0.56	

It can be inferred from the table that item no. 2 “I believe that virtual simulation technology of radiotherapy integration will positively affect my students” ranked first while item no. 4 “I believe if I use virtual simulation technology of radiotherapy in my teaching, it will help me in my future growth” ranked last. With a weighted mean of 3.68, the level of medical professors’ motivation to adopt this technology with respect to value belief is at “Highly Motivated” level.

This means that the level of medical professors’ motivation to adopt it with respect to value belief is at highly motivated level. Medical professors believe that with respect to value belief systems, they are highly motivated to adopt virtual simulation technology of radiotherapy inside their class. In addition, medical professors also believes that when using virtual simulation technology of radiotherapy inside their respective classes, the quality of their teaching will improve thus, positively affective the quality of learning of the students.

Table No. 6

The level of medical professors’ motivation to adopt virtual simulation technology of radiotherapy with respect to social influence

SOCIAL INFLUENCE	Mean	SD	Rank
1. I use virtual simulation technology of radiotherapy in teaching under the expectations of my friends and colleagues.	3.63	0.67	1
2. When I use virtual simulation technology of radiotherapy in teaching, I often consult other people for help to choose the best alternative available.	3.52	0.71	5
3. I achieve a sense of belonging with my friends and colleagues by using virtual simulation technology of radiotherapy in teaching.	3.60	0.67	3
4. When I use virtual simulation technology of radiotherapy in teaching, I ask my friends for useful information.	3.62	0.67	2
5. When I use virtual simulation technology of radiotherapy in teaching, I frequently gather information from friends or colleagues.	3.59	0.71	4
Weighted Mean	3.59	0.69	

It can be deduced from the table that item no. 1 “I use virtual simulation technology of radiotherapy in teaching under the expectations of my friends and colleagues” ranked first while item no. 2 “When I use virtual simulation technology of radiotherapy in teaching, I often consult other people for help to choose the best alternative available” ranked last. All in all, the level of medical professors’ motivation to adopt virtual simulation technology of radiotherapy with respect to social influence is at 3.59 with verbal interpretation of “Highly Motivated” level.

This means that the level of medical professors’ motivation to adopt virtual simulation technology of radiotherapy with respect to social influence is at a highly motivated level. Medical professors believe that when they use virtual simulation technology of radiotherapy inside their class, it is important to ask for assistance from another colleague. In addition, it is assumed that teachers, faculty, and instructors nowadays, are using it inside their class to reach the expectations of the academic community.

Table No. 7

The level of medical professors’ motivation to adopt virtual simulation technology of radiotherapy with respect to behavioral intention

BEHAVIORAL INTENTION	Mean	SD	Rank
1. I intend to increase the use of virtual simulation technology of radiotherapy in the future.	3.70	0.50	2
2. I will frequently use virtual simulation technology of radiotherapy in my teaching.	3.66	0.69	3.5
3. I find virtual simulation technology of radiotherapy useful to me in my teaching career.	3.71	0.54	1
4. It is easy for me to become skillful at using virtual simulation technology of radiotherapy.	3.65	0.63	5
5. Overall, I believe that virtual simulation technology of radiotherapy is easy to use.	3.66	0.63	3.5
Weighted Mean	3.67	0.60	

It can be inferred from the table that item no. 3 “I find virtual simulation technology of radiotherapy useful to me in my teaching career” ranked first while item no. 4 “It is easy for me to become skillful at using virtual simulation technology of radiotherapy” ranked last. With a weighted mean of 3.67, the level of medical professors’ motivation to adopt virtual simulation technology of radiotherapy with respect to behavioral intention is at “Highly Motivated” level.

This means that the level of medical professors’ motivation to adopt virtual simulation technology of radiotherapy with respect to behavioral intention is at highly motivated level. Medical professors believe that by using it today, it affects the way they will use it in their class in the future.

Table No. 8

The level of medical professors’ motivation to adopt virtual simulation technology of radiotherapy with respect to personal utilization

PERSONAL UTILIZATION	Mean	SD	Rank
1. I would feel comfortable using virtual simulation technology of radiotherapy in my class on my own.	3.55	0.74	3
2. If I wanted to, I could easily operate any of the technological tools in my class on my own.	3.56	0.74	2
3. I would be able to operate any of the technological tools in my class even if there is no one to show me around.	3.45	0.82	5
4. For me being able to use virtual simulation technology of radiotherapy on my own is important.	3.60	0.67	1
5. My interaction with virtual simulation technology of radiotherapy is easy and understandable.	3.55	0.77	4
Weighted Mean	3.54	0.75	

It can be deduced from the table that item no. 4 “For me, being able to use virtual simulation technology of radiotherapy on my own is important” ranked first while item no. 3 “I would be able to operate any of technological tools in my class even if there is no one to show me around” ranked last. All in all, the level of medical professors’ motivation to adopt virtual simulation technology of radiotherapy with respect to personal utilization is at 3.54 with a verbal interpretation of “Highly Motivated” level.

This means that the level of medical professors’ motivation to adopt virtual simulation technology of radiotherapy with respect to personal utilization is at highly motivated level. Medical professors believe that it is important to navigate the technology inside their class on their own. They also believe that when they independently use it in their class, their confidence level rises thus, making their strategies more impactful to the students.

4. Significant difference in attitude of medical professors when grouped according to their profile

Table No. 9

Significant difference in attitude of medical professors towards the use of virtual simulation technology of radiotherapy in the clinical teaching context when grouped according to age profile

Age		Sum of Squares	df	Mean Square	F	p-value	Decision	Int.
Content	Between Groups	0.518	3	0.173	1.126	0.341	Failed to Reject Ho	Not Significant
	Within Groups	21.309	139	0.153				
	Total	21.827	142					
Pedagogy	Between Groups	0.236	3	0.079	0.536	0.659	Failed to Reject Ho	Not Significant
	Within Groups	20.407	139	0.147				
	Total	20.643	142					
Assessment	Between Groups	0.019	3	0.006	0.042	0.989	Failed to Reject Ho	Not Significant
	Within Groups	21.527	139	0.155				
	Total	21.546	142					
Overall	Between Groups	0.177	3	0.059	0.451	0.717	Failed to Reject Ho	Not Significant
	Within Groups	18.173	139	0.131				
	Total	18.349	142					

A one-way ANOVA was performed to compare the level of attitude of medical professors towards the use of virtual simulation technology of radiotherapy when grouped according to their age profiles. The results show that for Content ($F(3, 139) = 1.126$, $p = .341$), there is no significant differences exist between the group, thus, failing to reject the null hypothesis. Moreso, the results for Pedagogy ($F(3, 139) = 0.536$, $p = .659$) poses no significant differences between age groups, thus failing to reject the null hypothesis. When it comes to Assessment ($F(3, 139) = 0.042$, $p = .989$), no significant differences were also found between groups, thus, failing to reject the null hypothesis as well. This means that the Overall ($F(3, 139) = 0.451$, $p = .717$) level of attitude of medical professors towards the use of technology in the clinical teaching context when grouped according to the age profiles has no significant differences.

This means that regardless of the age group of the respondents, they have a “Very Positive” attitude towards the use of virtual simulation technology of radiotherapy in teaching inside their classes in the context of clinical teaching. Age poses no issue in using it in medical class.

Table No. 10

Significant difference in attitude of medical professors towards the use of virtual simulation technology of radiotherapy in the clinical teaching context when grouped according to sex profile

Sex	Attitude	N	Mean	Std. Deviation	t	df	p-value	Decision	Int.
Male	Content	70	3.686	0.372	0.805	141	0.422	Failed to Reject Ho	Not Significant
Female		73	3.633	0.411					
Male	Pedagogy	70	3.689	0.374	0.314	141	0.754	Failed to Reject Ho	Not Significant
Female		73	3.668	0.390					
Male	Assessment	70	3.694	0.404	0.353	141	0.725	Failed to Reject Ho	Not Significant
Female		73	3.671	0.378					
Male	Overall	70	3.690	0.358	0.531	141	0.597	Failed to Reject Ho	Not Significant
Female		73	3.658	0.363					

An independent sample t-test was performed to examine the level of attitude of medical professors towards the use of technology when grouped according to their sex profile. In Content, there was no significant difference found between Male (M = 3.686, SD = 0.372) and Female (M = 3.633, SD = 0.411) groups; t(141) = 0.805, p = .422, thus failing to reject the null hypothesis. In Pedagogy, there was no significant difference found between Male (M = 3.689, SD = 0.374) and Female (M = 3.668, SD = 0.390) groups; t(141) = 0.314, p = .754, thus failing to reject the null hypothesis. In Assessment, there was no significant difference found as well between Male (M = 3.694, SD = 0.404) and Female (M = 3.671, SD = 0.378) groups; t(141) = 0.353, p = .725, thus failing to reject the null hypothesis as well. Overall (t(141) = 0.531, p = .597), there were no significant differences in the level of attitude of medical professors towards the use of technology in the clinical teaching context when grouped according to sex profile.

This means that regardless of the sex of the respondents, they have a “Very Positive” attitude towards the use of virtual simulation technology of radiotherapy in teaching inside their classes in the context of clinical teaching. Sex poses no issue in using technology in medical class.

Table No. 11

Significant difference in attitude of medical professors towards the use of virtual simulation technology of radiotherapy in the clinical teaching context when grouped according to length of service profile

Length of Service		Sum of Squares	df	Mean Square	F	p-value	Decision	Int.
Content	Between Groups	1.574	3	0.525	3.601	0.015	Reject Ho	Significant
	Within Groups	20.253	139	0.146				
	Total	21.827	142					
Pedagogy	Between Groups	1.406	3	0.469	3.388	0.020	Reject Ho	Significant
	Within Groups	19.236	139	0.138				
	Total	20.643	142					
Assessment	Between Groups	0.389	3	0.13	0.852	0.468	Failed to Reject Ho	Not Significant
	Within Groups	21.157	139	0.152				
	Total	21.546	142					
Overall	Between Groups	0.981	3	0.327	2.618	0.053	Failed to Reject Ho	Not Significant
	Within Groups	17.368	139	0.125				
	Total	18.349	142					

A one-way ANOVA was calculated to analyze the level of attitude of medical professors towards the use of virtual simulation technology of radiotherapy when grouped according to their length of service profiles. The results show that for Content ($F(3, 139) = 3.601$, $p = .015$), there is a significant difference that exist between the group. The results for Pedagogy ($F(3, 139) = 3.388$, $p = .020$) pose a significant difference between groups. In addition, Assessment ($F(3, 139) = 0.852$, $p = .468$), no significant differences were found between groups. This means that the Overall ($F(3, 139) = 2.618$, $p = .053$) level of attitude of medical professors towards the use of it in the clinical teaching context when grouped according to the age profiles has no significant differences.

Table No. 11.1

Post Hoc Tests (Scheffe) for Table 11

Dependent Variable	Length of Service		Mean Difference	Std. Error	Significance Level	Decision	Int.
Content	1 to 10	11 to 20	− .055	.087	.939	FR Ho	NS
		21 to 30	− .071	.081	.857	FR Ho	NS
		31 to 40	.333	.131	.095	FR Ho	NS
	11 to 20	1 to 10	.055	.087	.939	FR Ho	NS
		21 to 30	− .015	.080	.998	FR Ho	NS
		31 to 40	.388	.130	.034	Reject Ho	S
	21 to 30	1 to 10	.071	.081	.857	FR Ho	NS
		11 to 20	.015	.080	.998	FR Ho	NS
		31 to 40	.404	.126	.019	Reject Ho	S
	31 to 40	1 to 10	− .333	.131	.095	FR Ho	NS
		11 to 20	− .388	.130	.034	Reject Ho	S
		21 to 30	− .404	.126	.019	Reject Ho	S
Pedagogy	1 to 10	11 to 20	− .012	.085	.999	FR Ho	NS
		21 to 30	.045	.078	.955	FR Ho	NS
		31 to 40	.376	.127	.037	Reject Ho	S
	11 to 20	1 to 10	.012	.085	.999	FR Ho	NS
		21 to 30	.057	.078	.911	FR Ho	NS
		31 to 40	.389	.127	.029	Reject Ho	S

Legend: FR Ho = Failed to Reject Null Hypothesis; NS = Not Significant; S = Significant

Dependent Variable	Length of Service		Mean Difference	Std. Error	Significance Level	Decision	Int.
	21 to 30	1 to 10	− .045	.078	.955	FR Ho	NS
		11 to 20	− .057	.078	.911	FR Ho	NS
		31 to 40	.331	.123	.069	FR Ho	NS
	31 to 40	1 to 10	− .376	.127	.037	Reject Ho	S
		11 to 20	− .389	.127	.029	Reject Ho	S
		21 to 30	− .331	.123	.069	FR Ho	NS

Legend: FR Ho = Failed to Reject Null Hypothesis; NS = Not Significant; S = Significant

Table 11.1 presents the Post Hoc Tests for Table 11. As seen in Table 11, the one-way ANOVA for variables Content and Pedagogy reported a significant difference, hence, Post Hoc Test must be done. Post Hoc Test is done to know which among the groups has significant differences. Moreover, Scheffe test analysis was used because the groups have unequal number of respondents. It can be inferred from the table 11.1 that for variable “Content”, there is a significant difference between the means of 11 to 20 and 31 to 40, and 21 to 30 and 31 to 40, thus rejecting the null hypothesis for both groups. Furthermore, for variable “Pedagogy”, there is a significant difference between the means of 1 to 10 and 31 to 40, and 11 to 20 and 31 to 40, thus rejecting the null hypothesis for both groups as well.

This means that the length of service of the respondents have an effect in the attitude or medical professors towards the use of virtual simulation technology of radiotherapy in teaching inside their classes in the context of clinical teaching. Length of service poses an effect in the use of technology inside a medical class.

5. Significant relationship between the demographic profile and attitudes

Table No. 12

Significant relationship between the demographic profile of the respondents and medical professors’ attitudes towards the use of virtual simulation technology of radiotherapy in the clinical teaching context

Profile	Attitude towards the use of technology in the clinical teaching context	Statistical Tool	Computed Value	P-value	Decision	Int.
Age	Content	Pearson's Correlation	0.107	0.205	Failed to Reject Ho	Not Significant
Sex		Chi-square Test of Association	1.043	0.594	Failed to Reject Ho	Not Significant
Length of Service		Pearson's Correlation	-0.078	0.355	Failed to Reject Ho	Not Significant
Age	Pedagogy	Pearson's Correlation	0.032	0.703	Failed to Reject Ho	Not Significant
Sex		Chi-square Test of Association	1.220	0.543	Failed to Reject Ho	Not Significant
Length of Service		Pearson's Correlation	-0.177	0.034	Reject Ho	Significant
Age	Assessment	Pearson's Correlation	0.015	0.860	Failed to Reject Ho	Not Significant
Sex		Chi-square Test of Association	0.417	0.812	Failed to Reject Ho	Not Significant
Length of Service		Pearson's Correlation	-0.100	0.235	Failed to Reject Ho	Not Significant
Age	overall	Pearson's Correlation	0.056	0.510	Failed to Reject Ho	Not Significant
Sex		Chi-square Test of Association	1.220	0.543	Failed to Reject Ho	Not Significant
Length of Service		Pearson's Correlation	-0.127	0.130	Failed to Reject Ho	Not Significant

It can be inferred from the table that for variable “Content”, the p-values of age profile (.205), sex profile (.594), and length of service profile (.355) are higher than 0.05 value. This indicates that the variable “Content” is NOT SIGNIFICANTLY RELATED to any of the demographic profiles stated above, thus, the findings failed to reject the null hypothesis.

Furthermore, for variable “Pedagogy”, the p-values of age profile (.703), and sex profile (.543) are higher than 0.05 value. This indicates that the variable “Content” is NOT SIGNIFICANTLY RELATED to age and sex profiles of the respondents, thus, failing to reject the null hypothesis. However, it is found out that the weak negative relationship between Pedagogy and Length of Service is SIGNIFICANT, thus, rejecting the null hypothesis. This finding can be attributed to the faculty members who prefer to use traditional instructional materials. This means that the more that the medical professor stays in the institution, the more they become traditional in their teaching strategies.

Moreover, for variable “Assessment”, the p-values of age profile (.860), sex profile (.812), and length of service profile (.235) are higher than 0.05 value. This indicates that the variable “Assessment” is NOT SIGNIFICANTLY RELATED to any of the demographic profiles stated above, thus, the findings failed to reject the null hypothesis.

6. Significant difference in motivations of medical professors when grouped according to their profile

Table No. 13

Significant difference in motivations of medical professors to adopt virtual simulation technology of radiotherapy when grouped according to age profile

Age		Sum of Squares	df	Mean Square	F	p-value	Decision	Int.
Value Belief	Between Groups	0.144	3	0.048	0.241	0.867	Failed to Reject Ho	Not Significant
	Within Groups	27.539	139	0.198				
	Total	27.683	142					
Social Influence	Between Groups	0.211	3	0.07	0.218	0.884	Failed to Reject Ho	Not Significant
	Within Groups	44.979	139	0.324				
	Total	45.19	142					
Behavioral Intention	Between Groups	0.132	3	0.044	0.172	0.915	Failed to Reject Ho	Not Significant
	Within Groups	35.602	139	0.256				
	Total	35.734	142					
Personal Utilization	Between Groups	0.329	3	0.11	0.290	0.833	Failed to Reject Ho	Not Significant
	Within Groups	52.617	139	0.379				
	Total	52.947	142					
Overall	Between Groups	0.073	3	0.024	0.103	0.958	Failed to Reject Ho	Not Significant
	Within Groups	33.034	139	0.238				
	Total	33.107	142					

A one-way ANOVA was performed to compare the level motivations of medical professors to adopt virtual simulation technology of radiotherapy when grouped according to age profiles. The results show that for Value Belief ($F(3, 139) = 0.241$, $p = .867$), there is no significant differences exist between the group, thus, failing to reject the null hypothesis. For Social Influence ($F(3, 139) = 0.218$, $p = .884$) poses no significant differences between age groups, thus failing to reject the null hypothesis. For Behavioral Intention ($F(3, 139) = 0.172$, $p = .915$) poses no significant differences between age groups, thus failing to reject the null hypothesis. When it comes to Personal Utilization ($F(3, 139) = 0.290$, $p = .833$), no significant differences were also found between groups, thus, failing to reject the null hypothesis. This means that the Overall

($F(3, 139) = 0.103$, $p = .958$) level of motivations of medical professors to adopt technology when grouped according to the age profiles has no significant differences.

This means that regardless of the age group of the respondents, they are “Highly Motivated” to adopt technology in their classes in the context of clinical teaching. Again, age poses no issue in using technology in medical class.

Table No. 14

Significant difference in motivations of medical professors to adopt technology when grouped according to sex profile

Sex	Motivation	N	Mean	SD	t	df	p-value	Decision	Int.
Male	Value Belief	70	3.731	0.401	1.413	141	0.160	Failed to Reject Ho	Not Significant
Female		73	3.627	0.474					
Male	Social Influence	70	3.643	0.522	1.064	141	0.289	Failed to Reject Ho	Not Significant
Female		73	3.542	0.601					
Male	Behavioral Intention	70	3.720	0.450	1.071	141	0.286	Failed to Reject Ho	Not Significant
Female		73	3.630	0.546					
Male	Personal Utilization	70	3.580	0.559	0.742	141	0.459	Failed to Reject Ho	Not Significant
Female		73	3.504	0.658					
Male	Overall	70	3.669	0.430	1.147	141	0.253	Failed to Reject Ho	Not Significant
Female		73	3.576	0.528					

An independent sample t-test was performed to examine the level of motivations of medical professors to adopt technology when grouped according to their sex profile. In Value Belief, there was no significant difference found between Male (M = 3.731, SD = 0.401) and Female (M = 3.627, SD = 0.474) groups; t(141) = 1.413, p = .160, thus failing to reject the null hypothesis. In Social Influence, there was no significant difference found between Male (M = 3.643, SD = 0.522) and Female (M = 3.542, SD = 0.601) groups; t(141) = 1.064, p = .289, thus failing to reject the null hypothesis. In Behavioral Intention, there was no significant difference found between Male (M = 3.720, SD = 0.450) and Female (M = 3.630, SD = 0.546) groups; t(141) = 1.071, p = .286, thus failing to reject the null hypothesis. In Personal Utilization, there was no significant difference found as well between Male (M = 3.580, SD = 0.559) and Female (M = 3.504, SD = 0.658) groups; t(141) = 0.742, p = .459, thus failing to reject the null hypothesis as well. Overall (t(141) = 1.147, p = .253), there were no significant differences in the level of motivations of medical professors to adopt technology when grouped according to their sex profile.

This means that regardless of the sex of the respondents, they are “Highly Motivated” to adopt virtual simulation technology of radiotherapy in their classes in the context of clinical teaching. Again, sex poses no issue in using technology in medical class.

Table No. 15

Significant difference in motivations of medical professors to adopt virtual simulation technology of radiotherapy when grouped according to length of service profile

Length of Service		Sum of Squares	df	Mean Square	F	p-value	Decision	Int.
Value Belief	Between Groups	1.196	3	0.399	2.092	0.104	Failed to Reject Ho	Not Significant
	Within Groups	26.487	139	0.191				
	Total	27.683	142					
Social Influence	Between Groups	1.283	3	0.428	1.354	0.260	Failed to Reject Ho	Not Significant
	Within Groups	43.907	139	0.316				
	Total	45.19	142					
Behavioral Intention	Between Groups	1.241	3	0.414	1.668	0.177	Failed to Reject Ho	Not Significant
	Within Groups	34.493	139	0.248				
	Total	35.734	142					
Personal Utilization	Between Groups	2.672	3	0.891	2.463	0.065	Failed to Reject Ho	Not Significant
	Within Groups	50.274	139	0.362				
	Total	52.947	142					
Overall	Between Groups	1.348	3	0.449	1.966	0.122	Failed to Reject Ho	Not Significant
	Within Groups	31.76	139	0.228				
	Total	33.107	142					

A one-way ANOVA was performed to compare the level motivations of medical professors to adopt technology when grouped according to length of service profiles. The results show that for Value Belief ($F(3, 139) = 2.092$, $p = .104$), there is no significant differences exist between the group, thus, failing to reject the null hypothesis. For Social Influence ($F(3, 139) = 1.354$, $p = .260$) poses no significant differences between length of service groups, thus failing to reject the null hypothesis. For Behavioral Intention ($F(3, 139) = 1.668$, $p = .177$) poses no significant differences between length of service groups, thus failing to reject the null hypothesis. When it comes to Personal Utilization ($F(3, 139) = 2.463$, $p = .065$), no significant differences were also found between groups, thus, failing to reject the null hypothesis. This means that the Overall ($F(3, 139) = 1.966$, $p = .122$) level of motivations of medical professors to adopt technology when grouped according to the length of service profiles has no significant differences.

This means that regardless of the length of service of the respondents, they are “Highly Motivated” to adopt virtual simulation technology of radiotherapy in their classes in the context of clinical teaching.

7. Significant relationship between attitudes and motivation

Table No. 16

Significant relationship between medical professors’ attitudes towards the use of virtual simulation technology of radiotherapy in the clinical teaching context and the medical professors’ motivation to adopt technology

Variables	Statistical Tool	Computed Value	P-value	Decision	Interpretation
Attitudes Towards the Use of Virtual Simulation Technology of Radiotherapy in the Clinical Teaching Context	Pearson's Correlation	0.851	0.001	Reject Ho	Significant
Motivation to Adopt Virtual Simulation Technology of Radiotherapy					

It can be deduced from the table that the relationship between the attitude towards the use of virtual simulation technology of radiotherapy in the clinical teaching context and motivation to adopt technology is at .851. This means that the relationship between the two variables is a strong positive relationship. This relationship is found to be SIGNIFICANT thus, rejecting the null hypothesis.

Moreover, the more that the medical professor has positive attitude towards the use of it in their class, the more they will become motivated to use it in their class. On the contrary, if they have negative attitude towards the use of technology in their class, they are less likely to be motivated in using them.

8.Based on the findings of the study what output may be crafted?

This proposed blended learning webinar provides instructional support to the faculty in using virtual simulation technology of radiotherapy in their medical classes. It is a way to upskill medical professors in the current technologies used in the field of medicine and medical education. In addition, technology support for the students is also included in the proposed webinar.

A PROPOSED BLENDED LEARNING WEBINAR OF MEDICAL PROFESSORS IN TECHNOLOGY USE IN MEDICAL SCHOOLS

OBJECTIVE: Improve the technological and pedagogical skills of medical professors in Chongqing Medical University				
Strategies	**Activities**	**Person/s Responsible**	**Timeline**	**Evaluation**
A. Upskill the technological and pedagogical knowledge and skills of faculty members	1. Invite guest speakers to in-service webinar of medical faculty members 2. Design an annual improvement plan for the institution 3. Formation of Medical Technology Research Center (MTRC)	1. University and department heads and directors 2. Faculty members 3. Resource speakers	1. Quarterly for the whole school year 2. Annual 3. As soon as memorandum was released to create the MTRC	1. Feedback analysis of in-service webinar 2. Performance Analysis of Faculty members 3. Customer feedback form for the MTRC
B. Create a more positive attitude towards the use of technology	1. Provision of exposition tours to different medical facilities 2. Provision of simulation activities of different medical scenarios using technology	1. Department heads 2. Faculty members 3. Students	1. Quarterly for the whole school year	1. Feedback analysis for exposition tours 2. Reflection journals of the students
C. Provide technological support to medical students	1. Invite guest speakers to webinars about current digital technologies in medical field	1. Department heads 2. Faculty members 3. Students 4. Resource Speakers	1. Quarterly for the whole school year	1. Feedback analysis of in-service webinar 2. Academic performance of the students

Discussion

By analyzing demographic profile, we can conclude Chongqing Medical University is an institution that adheres to no sex and gender discrimination. The finding in the sex of the respondents is surprising because several research concludes that the medical profession is highly dominated by men (Carr, et. al., 2018; Gold, et. al., 2020; Ritcher, et. al., 2020; Pitcher, et. al, 2020; Nocco, et. al., 2021; Ziai, et. al., 2022). Most of the academic medical faculty are coming from less than 40 years old age group, which is supported by the findings of Adarmouch, Sebbani, and Amine (2020). Moreover, the study also construed that most of its faculty members has more than 10 years' experience as an academician.

The level medical professors' attitude towards the use of technology in the clinical teaching context with respect to pedagogy, content, and assessment is at a "Very Positive" level, which supported by the findings

of Goh and Sandars (2020). They believe that the use of technology in the field of medical education impacts positively both educators and students across the world. Moreover, simulations, virtual patients, and e-learning have become advantageous pedagogical strategies than facilitates active learner-centered approaches (Moran, et. al., 2018).

The level of medical professors' motivation to adopt technology with respect to value belief, social influence, behavioral intention, and personal utilization is at "Highly Motivated" level. A research by Remtulla (2020) demonstrates that adopting technologies such as, virtual reality, simulations, and telemedicine provides faster delivery of latest content in the field of medicine. Furthermore, the introduction of various digital technologies revolutionizes the future medical and dental education thus, allowing teaching and learning to be individualized, interactive, and efficient (Park, et. al., 2021). Digital teaching could increase learning satisfaction, knowledge gain, and even cost-effectiveness (Yeung, et. al., 2022). The literature review conducted by the researchers acknowledges the importance of the use of technology in medical education. Positive perspective on the use of technology in medical education is crucial to acquire acceptable results of learning (Shabila, et. al., 2021).

There is no significant difference between the demographic profile and the attitudes towards the use of technology. No significant difference has been found in the motivations to adopt it when grouped according to their profile. Lastly, the findings have shown no significant relationship between attitudes and the motivation to adopt technology. This is consistent with a study by Martin, et. al. (2020). The study explained that the faculty whose been with the institution for more than 15 years have lower motivation to use digital technologies in their class. However, given the distance learning brought by the pandemic, they were forced to use these digital technologies and forcing faculty members to be competent in using these digital tools.

It can be deduced that the relationship between the attitude and motivation is a strongly positive. This finding is supported by Vishwanathan, et. al. (2021) that medical faculty members have positive perception towards the adoption of digital education methods in teaching undergraduate medical students. It is further supported by Zhu and Zhang (2021) that instructors recognized the usefulness of digital technologies and the ease of using them in their class, especially in the context of public health crisis. Several studies conducted the same study, and the same result was yielded (Jabali, et. al., 2019; Tuma, et. al., 2021; Kumari, et. al., 2022).

Summary Of Findings

The significant findings of the study are:

1.Majority of the respondents are female, with age from 31 to 40 years old group, and with length of service of 31 to 40 years.

2.The level medical professors' attitude towards the use of technology in the clinical teaching context with respect to pedagogy, content, and assessment is at a "Very Positive" level.

3.The level of medical professors' motivation to adopt technology with respect to value belief, social influence, behavioral intention, and personal utilization is at "Highly Motivated" level.

4.The study failed to reject the first null hypothesis which states that "there is no significant difference between the demographic profile of the respondents and the medical professors' attitudes towards the use of technology in the clinical teaching context."

5.The study failed to reject the second null hypothesis which states that "there is no significant relationship between the demographic profile of the respondents and medical professors' attitudes towards the use of technology in the clinical teaching context."

6.The study failed to reject the third null hypothesis which states that "there is no significant difference in the motivations of medical professors to adopt technology when grouped according to their profile."

7.Lastly, the findings failed to reject the fourth null hypothesis which states that "there is no significant relationship between medical professors' attitudes towards the use of technology in the clinical teaching context and the medical professors' motivation to adopt technology."

Conclusion

Based on the summary of findings, the following conclusions can be drawn.

1.Teachers in medical schools are predominantly women.

2.Medical professors believe that the use of technology will yield better teaching performance in terms of pedagogy, content, and assessment. Thus, improving the quality of learning of the medical students.

3.The demographic profile age and sex poses no impact in the attitude and motivation of medical professors in using technology in their class. On the contrary, length of service may have impacted the faculty member's attitude and motivation in using technology in their class.

4.There is a strong positive relationship between the between the attitude towards the use of technology in the clinical teaching context and motivation to adopt technology. This relationship is found to be significant thus, rejecting the null hypothesis.

Recommendations

Based on the summary of findings, the following recommendations can be drawn:

1.It is recommended to upskill the technological and pedagogical knowledge and skills of faculty member. Continuous upskilling is crucial especially in the context of a post-pandemic education.

2.The school administration must ensure to create a more positive attitude towards the use of technology in medical classes by providing opportunities for exposition tours to different medical facilities and

providing simulation activities for various medical situations that uses technology.

3.Technological support to medical students is as important as the technological support to faculty members. As future experts in the medical field, they are expected to be equipped with technological skills that are crucial in a post-pandemic world.

4.This study had the disadvantage of small sample size and short study time. The future researchers should further examine the factors affecting the attitudes and motivations of medical professors in using technology in their class. It is also recommended to replicate this type of study to other medial universities to check reliability of the results.

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