

The Medical Students' Dilemma: E-Textbook or Printed Textbook? A Cross Sectional Study from Medical Colleges in Rawalpindi Pakistan

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ABSTRACT

Objective: To assess students' perspectives of traditional learning and text books and more advanced e-learning and digital text books learning from digital and printed text.

Study Design: Cross-sectional study.

Place and Duration of Study: Course of six months from Jan to Jun 2022 in two Medical Colleges of Rawalpindi Pakistan.

Methodology: The study was a cross-sectional study carried out over course of six months from Jan to Jun 2022 in two Medical Colleges. Participants were 300, recruited through non-probability convenience sampling technique. A questionnaire and online survey were used to obtain information about response of medical students towards e-book and printed text effecting the quality of education. The data was analyzed using SPSS software version 23.0.

Results: Mean age of participants was 22 ± 2.24 years and majority were between 21-24 years of age 212(71%) with almost equal proportions of males 140(47%) and females 160(53%) Significant association was found between gender and solid plan with traditional learning $p=0.046$ and more privacy of data in printed text, more reliability $p=0.033$. Significant association also found between age category and ease of modification of e text $p=0.023$, improvement in skills $p=0.024$ and also decrease in motivation due to technical disruption 0.034, instant feedback in e learning $p=0.002$.

Conclusion: Mean while Medical students favored the e-learning and digital books, they didn't over rule completely the significance of traditional learning and paperback books.

Keywords: Digital books, E-learning medical students, Perceptions, Text books, Traditional learning.

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INTRODUCTION

Technology makes information easy to access, especially in digital source.¹ Following the rise to prominence of electronic book (e-book) technology in the last decade of 20th century term e book has been used widely. In this study, the words "digital books, "electronic books," and "e-books" have all been used interchangeably. An e-book is a publication that is available in digital form and is intended to be seen on a computer screen, to put it simply. Additional features like sound, animation, search, hypertext, and interactive capabilities could be added to the digital book.² By saving time, providing value as a collective online reference, and facilitating dynamic and economical collection management, e-books can successfully complement an academic goal.³

Digital texts are being used more and more in teaching and learning-It offers flexibility, is self-paced, and has media reach because it may be utilised

whenever and whenever it is necessary.⁴ One of the key drawbacks is that it cannot replace hands-on learning, which is an essential component of the medical curriculum and is therefore simple to comprehend.⁵ Printed text is referred to as the traditional reading resource provided in the form of text books, books, magazines, handouts Printed writings are actual, material things with beginnings and ends. The cost of college print textbooks has gone up, which has an effect on the accessibility and affordability of higher education. Because textbooks are so expensive, many students postpone buying them or are unable to afford them, which causes them to fail their classes.⁶

Students' experiences, attitudes, and views regarding e-textbooks and their influence on learning from digital text may frustrate teachers if they are unmotivated, social interaction is reduced, and there is a poor Internet connection.⁷ Because of the rise in the cost of print textbooks as well as the use and accessibility of e textbooks digital textbooks are good alternatives.⁸ The subject of totally eliminating printed or traditional textbooks remains unsolved despite several

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studies conducted across the globe.⁹ However, the daily modernization and technological advancement trend may result in a full transition from printed textbooks to electronic textbooks.

The aim of this study was to ascertain if the medical undergraduate students preferred paper textbooks or electronic textbooks. The study collects data on students' opinions, attitudes, and experiences with relation to e-textbooks and how they affect learning. The results of this study may add to the expanding body of knowledge about users' perceptions, attitudes, and behaviors regarding print versus digital textbooks, as well as suggest ways to reduce the cost of textbooks and other course materials by adopting digital.

METHODOLOGY

A quantitative research design based on survey method was conducted from Jan to July 2022 in two medical colleges of Rawalpindi, one private and public sector. To explore the perceptions of medical students toward the traditional learning from printed text books and more advanced e learning from digital text books. The sample size of 250 was calculated as per the reference study,¹¹ 350 questionnaires were distributed keeping in view the response rate of 65%,¹² The study participants were undergraduate medical students of these medical colleges, enrolled in the study through convenience sampling technique was calculated. A modified structured validated questionnaire,¹³ was for the purpose of the study. First segment was about Sociodemographic information, the second was regarding the use of e text books and third section was about traditional printed text books and perceptions of traditional.¹⁴ Learning. Ethical approval was taken from Ethical review Board of Army Medical College, NUMS (ERC/ID/27). All participants agreed to the consent statement and declaration of anonymity and confidentiality before filling the questionnaires. The questionnaire consisted of three segments. After the completion of data collection procedure. It was entered and analyzed in SPSS software 23. Using the descriptive analysis technique, the quantitative data from the questionnaire were examined. Frequencies and percentages were calculated for categorical variables and Chi square test was applied to find out the association between categorical variables.

RESULTS

A total of 315 questionnaires were returned making a response rate of 88%.¹⁵ questionnaires were excluded as they not filled properly. The study results showed almost equal proportions of males 140(47%)

and females 160(53%). Mean age of participants was 22±2.24 years minimum age was 17 years and maximum 27 years. Majority Lie between 21-24 years of age 212(71%) and student of public sector medical college 200(67%) and the Sociodemographic of study cohort are shown in the Table-I.

Table-I: Sociodemographic of Study Cohort

Variable	Frequency	Percent
Gender of Medical Student		
Male	140	47
Female	160	53
Age cat of Participants		
17 to 20 years	68	23
21 to 24 years	212	71
25 to 28 years	20	7
College		
Private medical college	100	33
Public medical college	200	67
Year Medical		
First year	47	16
Second year	74	25
Third year	61	20
Fourth year	52	17
Final year	66	22

In response to questions regarding perception of medical student agreed that e-books are easy to carry 267(89%), easy to modify 259(86%) and more up-to-date 277(92%). for most of the participants 259(86%) three dimensional study on digital devices improves skills and provide a wide selection of courses 270 (90%). However, for more than two third 242(81%) technical disruption in digital devices decrease their motivation. For major preponderance of participants 281(94%) e-learning was multimodal and provides instant feedback 268(90%). In response to question regarding difficulty in using e text books and e-learning tools 182(61%) agreed. While participants in majority seemed in favor of e learning, responses regarding traditional learning and printed texts books was also encouraging. A major proportion of participants 251 (84%) agreed that traditional learning gives a stable and solid plan and 266(89%) printed text books can be read for long time and to almost three quarter 219(73%) ease and accessibility to lectures in traditional learning two third agreed 196(65%) and one third 104(35%) disagreed. About cost effectiveness of printed books however most 275(92%) agreed that printed textbooks had less strain on eyes Almost one-third (32.3%) of the participants "agreed" with the negative effects caused by the screen light to their eyes. Major proportion of participants agreed 240(80%) that traditional learning

is more interactive materials. majority 241(80%) also agreed that printed text was difficult to share. For a

and also decrease in motivation due to technical disruption 0.034, instant feedback in e learning $p=0.002$.

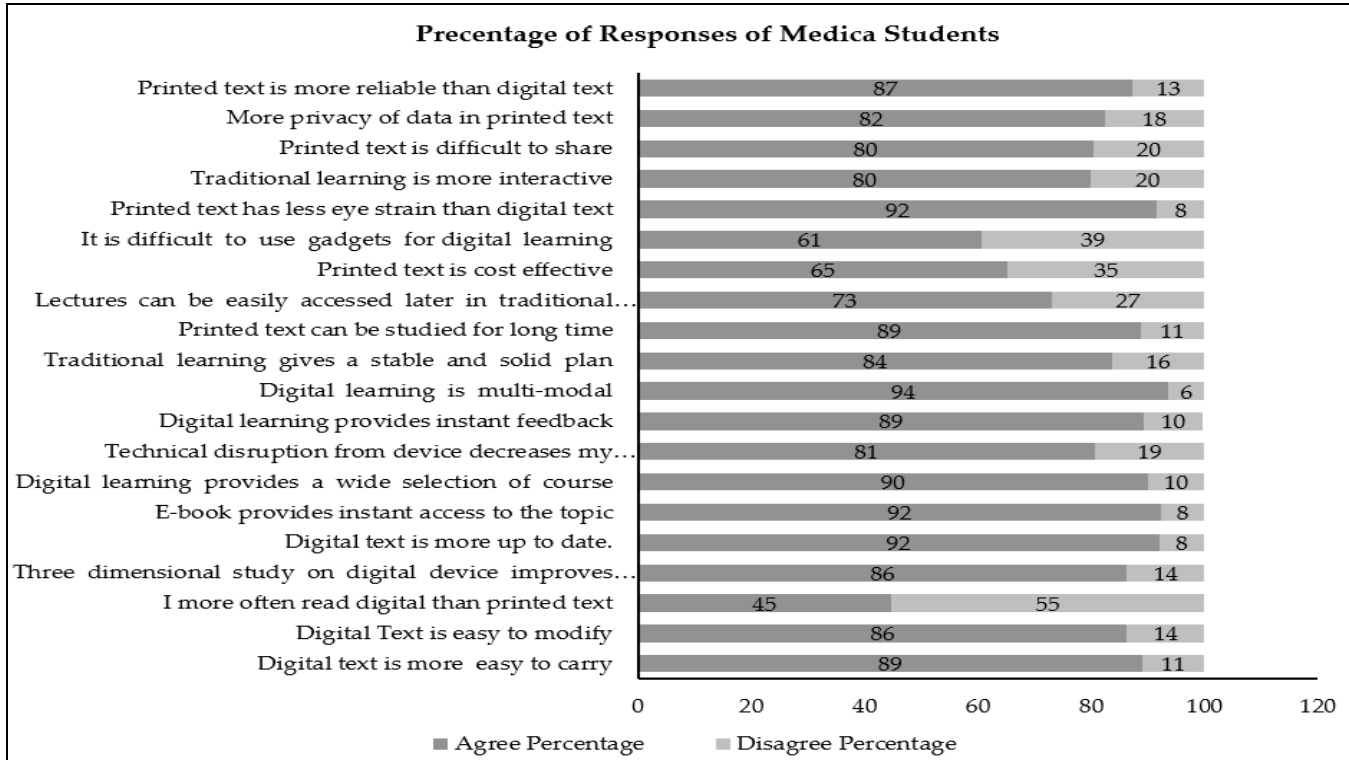


Figure-1: Percentage of Responses of Medica Students

major proportion 262(87%) printed text was more reliable than digital text. Responses shown in Figure-1.

There was significant association was found between gender and ease to modify= $p=0.012$ and change text in e learning $p=0.012$, improvement in skills $p=0.012$ in e learning and solid plan with traditional learning $p=0.046$ and more privacy of data in printed text, more reliability $p=0.033$ as shown in Figure-2.

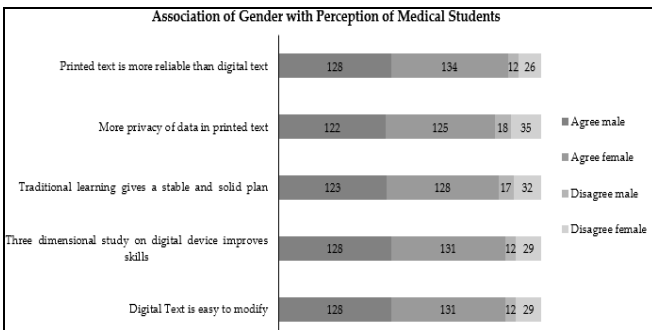


Figure-2: Association of Gender with Perception of Medical Students

Chi square test of association revealed significant association between age category and ease of modification of e text $p=0.023$, improvement in skills $p=0.024$

Regarding traditional learning there was also significant association between age category and stable and solid plan by printed text books 0.033, cost effectiveness of printed text 0.024, difficulty in sharing printed text $p=0.045$, privacy of data in printed text 0.046 as shown in Table-II. However no significant association was found between type of medical college and perceptions of e-Learning and traditional learning.

Significant association was found out on applying Chi square test between class year of medical students and provision of wide selection of courses in e learning $p=0.042$ and multiple modalities 0.016 in e-learning where as significant association was found between class year and more cost effectiveness of printed text books 0.005, difficulty in use of e learning tools such as gadgets= 0.014 , less eye strain $p=0.037$, as shown in Table-III.

DISCUSSION

The perception of e-learning, e text books and printed books traditional learning was assessed in undergraduate medical students of a public sector and private medical college in Rawalpindi Pakistan. In the present study, students strong. The study results sho-

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Table-II: Association between Age Category and Stable and Solid Plan

		Age cat of participants			Total	Chi-Square
		17 - 20 years	21 - 24 years	25 - 28 years		
Digital Text is easy to modify	Agree	52	190	17	259	.023
	Disagree	16	22	3	41	
Three dimensional study on digital device improves skills	Agree	52	190	17	259	.023
	Disagree	16	22	3	41	
Technical disruption from device decreases my motivation and comprehension	Agree	48	179	15	242	.034
	Disagree	20	33	5	58	
Digital learning provides instant feedback	Agree	57	193	18	268	.002
	Disagree	11	19	1	31	
Traditional learning gives a stable and solid plan	Agree	51	185	15	251	.033
	Disagree	17	27	5	49	
Printed text is cost effective	Agree	35	147	14	196	.024
	Disagree	33	65	6	104	
Printed text is difficult to share	Agree	48	178	15	241	.045
	Disagree	20	34	5	59	
More privacy of data in printed text	Agree	50	182	15	247	.046
	Disagree	18	30	5	53	

Table-III: Association between class year and more cost effectiveness

		Year Medical					Total	Chi Square
		First	Second	Third	Fourth	Final		
Digital learning provides a wide selection of course	Agree	37	66	55	49	63	270	.042
	Disagree	10	8	6	3	3	30	
Digital learning is multi-modal	Agree	39	69	58	51	64	281	.016
	Disagree	8	5	3	1	2	19	
Printed text is cost effective	Agree	20	47	43	37	49	196	.005
	Disagree	27	27	18	15	17	104	
It is difficult to use gadgets for digital learning	Agree	18	45	41	35	43	182	.014
	Disagree	29	29	20	17	23	118	
Printed text has less eye strain than digital text	Agree	38	67	57	50	63	275	.037
	Disagree	9	7	4	2	3	25	

wed almost equal proportions of males 140(47%) and females 160(53%). Mean age of participants was 22± 2.24 years Majority were between 21-24 years of age 212(71%) and student of public sector medical college 200(67%). For medical students digital text books were easy to carry 267(89%), easy to modify 259(86%) and more up-to-date 277(92%). However evidence from US indicated that ink print was preferred when indepth reading and understanding was sought and for breath of knowledge they preferred e learning due to ease of access and time-saving considerations.¹³ In equal proportion of participants agreed 134(45%) and disagreed 166(53%) about reading e books more often than then printed. Contrary to research conducted in Indonesia where the majority of respondents favored e books and e-learning techniques over printed text books and conventional methods,¹⁴ for most of the participants 259(86%) three dimensional study on digital devices improves skills and provide a wide selection of courses 270(90%). However, for more than two third 242(81%) technical disruption in digital

devices decrease their motivation. 281(94%) e learning was multimodal and provides instant feedback 268 (90%). These findings are in agreement with a research conducted in South Africa.¹⁵ In response to question regarding difficulty in using e-text books and e-learning tools majority 182(61%) agreed. These findings are similar to a research conducted in a private medical college in Pakistan.¹⁶

While participants in majority seemed in favor of e-learning, responses regarding traditional learning and printed texts books was also encouraging. A major proportion of participants 251(84%) agreed that traditional learning gives a structured plan For a major proportion 262(87%) printed text was more reliable than digital text. For majority 266(89%) printed text books can be read for long time. Contrary to study conducted in Iran which indicated the participants encounter no significant problem in reading digital texts.¹⁷ In response to easy accessibility to lectures in traditional learning more than one fourth 81(27%) disagreed while three quarter 219(73%) agreed. Regarding cost effec-

tiveness of printed text books there was a mixed response two third agreed 196(65%) and one third 104 (35%) disagreed. Most of the participants 275(92%) agreed that printed textbooks had less strain on eyes than e text books. While major proportion of participants agreed 240(80%) that traditional learning is more interactive contrary to a study coinducted in Nepal it was documented that the majority of students chose print because it was simple to underline important points, did not strain the eyes when reading, caused less distraction while reading materials, and was inexpensive to purchase.¹⁸

There was significant association was found between gender and ease to modify e texts $p=0.012$ improvement in skills $p=0.012$ in e learning which is congruent with a study conducted in Jeddah Saudi Arabia.¹⁹ Significant association was found between gender and solid plan with traditional learning $p=0.046$ and more privacy of data in printed text, more reliability $p=0.033$. while research from Indonesia found contradictory results.²⁰ Additionally, it is hierarchical, designed for private reading, and gives the reader a fairly linear and unchanging reading experience.²¹

Significant association between age category and ease of modification of e text $p=0.023$ improvement in skills $p=0.024$ and also decrease in motivation due to technical disruption 0.034, instant feedback in e-learning $p=0.002$. 20-43 which is in line with study in Morroco noted the absence of teacher student interaction, the significance of the visual interface, technological difficulties, and connectivity challenges.²²

Regarding traditional learning there was also significant association between age category and structured plan $p=0.033$, cost effectiveness of 0.024 and difficulty in sharing $p=0.045$ printed text. These findings are consistent with previous research conducted in Pakistan on undergraduate medical students.²³ A study conducted in Kuwait indicated-The trial showed that pupils preferred reading electronic books over paperback versions. But the difference wasn't really that big. Additionally, there was little variation in the three conditions' understanding levels. However, students took far less time to finish reading the paperback book.²⁴

There was also found between class year of medical students and provision of wide selection of courses $p=0.042$, multiple modalities $p=0.016$, difficulty in use of gadgets $p=0.014$ in e-learning. This is similar to study conducted in SaudiaArabia which favored multiple modalities of e-learning like audiovisual aids,

power point presentations, availability of diverse courses cost effectiveness of printed text books $p=0.005$ and eye strain $p=0.037$.²⁵

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LIMITATION OF STUDY

The data for the study is collected in the year 2019- 20, which can be a significant limitation. As teaching modalities were shifted to online learning due to pandemic which could have biased the perceptions.

CONCLUSION

Meanwhile medical students favored the e learning and digital books, they didn't over rule completely the significance of traditional learning and paper back books. Therefore, there should be a balance between print and digital formats competing with the cost factor, user engagement and learning, and convenience.

Conflict of Interest: None.

Author's Contribution

Following authors have made substantial contributions to the manuscript as under:

NAT: Conception, Design, Write up, Review of manuscript & approval for the final version to be published.

BASA: Analysis and interpretation, Write up, Review of manuscript & approval for the final version to be published.

NA: Data Collection and Entry methodology & approval for the final version to be published.

MTA: Data collection, Entry analysis & approval for the final version to be published.

MAR: Data collection and Entry referencing, Analysis & approval for the final version to be published.

M: Data collection and Entry analysis, Interpretation & approval for the final version to be published.

Y: Data collection and Data entry & approval for the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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