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ORIGINAL ARTICLE

Use of the Computer and Internet by Teachers in Medical Education: A Study at Medical Colleges of Pakistan

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ABSTRACT

Background and aim: In recent decades, formal medical education has evolved considerably, especially since computers and the Internet were introduced. A major part of the medical curriculum in most industrialized nations is the study of information technology (IT). During formal classroom teaching at the undergraduate level, the present study examined the methods of teaching, the extent of using computers, and the use of Internet by teachers.

Methods: A questionnaire based study was carried out on 126 medical teachers in medical colleges of Pakistan from October 2021 March 2022. Assisting professors, associate professors, and professors are the faculty members involved in the study. Study participants did not include tutors, demonstrators, or residents. Prior to study conduction, ethical approval was taken. Additionally, the questionnaire asked questions regarding the use of computers and the internet in teaching, in addition to the basic information, such as gender, age, designation and department. We pretested it with a randomly selected group of teachers and based on their feedback, we made some minor modifications and deleted some questions.

Results: Of the total teachers participating, there were 90 (71.4%) male and 36 (28.6%) females. Participants were distributed based on their age as follows: 78 (61.9%) <35 years, 13 (8.1%) 36-50 years, and 35 (27.8%) >50 years. The incidence of traditional teaching, computerized projections, teaching through slides, and combination of traditional methods with slides were 19 (15.1%), 107 (84.9%), 68 (54%), and 32 (25.4%) respectively. Based on pattern of internet usage for teaching, the occurrence of collection of teaching materials without internet, collection of teaching materials using internet, access from desktop, and access from smartphones were 28 (22.2%), 88 (69.8%), 66 (52.4%), and 16 (12.7%) respectively. A significant statistical correlation exists between computer and Internet use among teachers of younger ages, with more frequent usage among teachers of younger ages.

Conclusion: The present study concluded that Medical education has become increasingly computer-based and Internet-based. Furthermore, its use is more common among younger professors. However, the most noteworthy conclusion was that the majority students still choose chalkboard lecturing for better knowledge of the material.

Keywords: Medical education, Computer, Internet

INTRODUCTION

Over decades, teaching, particularly conventional classroom teaching in academic institutions, has experienced major transformations. Beginning with oral instruction and progressing through different levels, formal classroom education arrived at the stage of blackboard teaching, which is still commonly utilized today with a variety of boards and writing implements available [1, 2]. Several industrialized nations have selected information technology (IT) as a part of the integrated learning goals to serve as a guideline for medical education. The incorporation of information technology into medical school curricula was intended to encourage the use of computer technology to improve students' scientific and medical understanding [1]. One of the primary aims of medical education is to inspire learners to keep learning about medicine by becoming active learners. Adequate information-seeking skills and regular usage of actual scientific sources are critical components of this process [3-5].

The term "digital divide" refers to the growing disparity between computer users and non-users. It is the world's separation between those who have new ICT (Information and Computer Technology) and those who do not [4]. The World Health Organization highlighted the digital gap as "more striking than any other imbalance in health or income" [6, 7]. The benefits of information technology would be an illusion if medical students lacked basic computer skills and the resources needed to enable meaningful computer literacy to access and assess web-based material [8]. In poor nations such as India, the implementation of computer-aided learning has received less attention [9]. Scientific data revealed that the usage of information technology has expanded dramatically over the decades. The use of information technology by medical practitioners has expanded, resulting in better medical treatment. In terms of computer or information technology usage in medical education, medical students are frequent computer and internet users [10-12]. The current study seeks to ascertain medical instructors' usage of computers and the internet, as well as the factors that influence their use.

METHODOLOGY

A questionnaire based study was carried out on 126 medical teachers in medical colleges of Pakistan from October 2021 March 2022. Assisting professors, associate professors, and professors are the faculty members involved in the study. Study participants did not include tutors, demonstrators, or residents. Prior to study conduction, ethical approval was taken. Additionally, the questionnaire asked questions regarding the use of computers and the internet in teaching, in addition to the basic information, such as gender, age, designation and department. We pretested it with a randomly selected group of teachers and based on their feedback, we made some minor modifications and deleted some questions. SPSS was used to analyze the data, and the Chi square test was used; a p value of 0.05 was considered statistically significant.

RESULTS

Of the total teachers participating, there were 90 (71.4%) male and 36 (28.6%) females. Participants were distributed based on their age as follows: 78 (61.9%) <35 years, 13 (8.1%) 36-50 years, and 35 (27.8%) >50 years. The incidence of traditional teaching, computerized projections, teaching through slides, and combination of traditional methods with slides were 19 (15.1%), 107 (84.9%), 68 (54%), and 32 (25.4%) respectively. Based on pattern of internet usage for teaching, the occurrence of collection of teaching materials without internet, collection of teaching

materials using internet, access from desktop, and access from smartphones were 28 (22.2%), 88 (69.8%), 66 (52.4%), and 16 (12.7%) respectively. A significant statistical correlation exists between computer and Internet use among teachers of younger ages, with more frequent usage among teachers of younger ages. Gender's distribution is shown in Figure-1. Age-wise distribution of the participants are illustrated in Figure-2. Figure-3 depicts the prevalence of conventional teaching, computerized projections, slide teaching, and a mix of traditional and slide teaching. Figure-4 demonstrates the incidence of collecting teaching materials without the internet, collecting teaching materials with the internet, access from a desktop computer, and access from a smart phone based on the pattern of internet usage for teaching. Students' preferences for instructional methods are shown in Table-I.

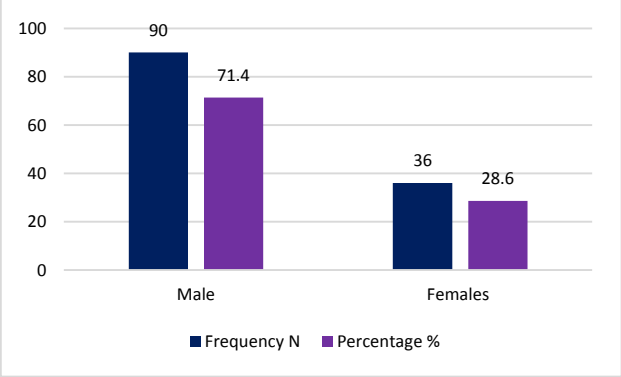

Figure-1: Gender's distribution

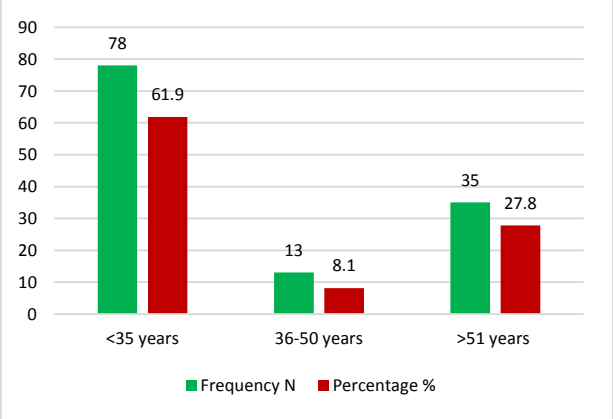

Figure-2: Age-wise distribution of all the participants

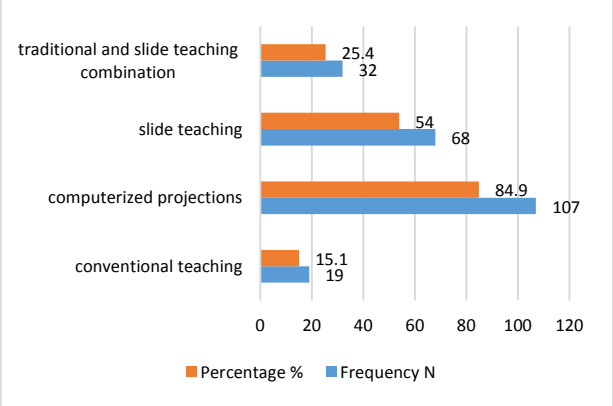

Figure-3: Prevalence of conventional teaching, computerized projections, slide teaching, and a mix of traditional and slide teaching.

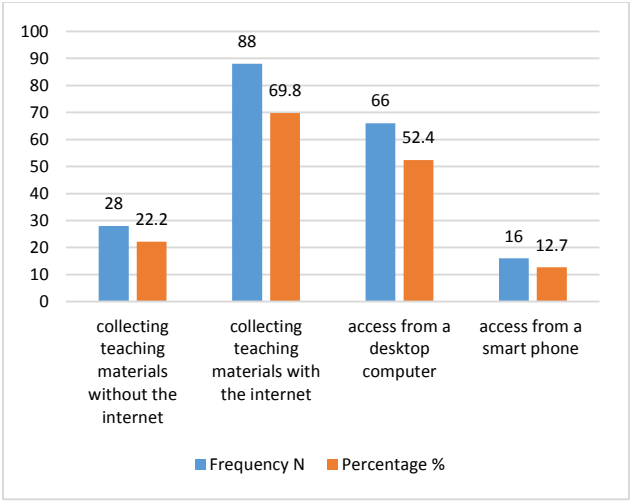

Figure-4: incidence of collecting teaching materials without the internet, collecting teaching materials with the internet, access from a desktop computer, and access from a smart phone based on the pattern of internet usage for teaching.

Table-1: Students' preferences for instructional methods

Teaching methods	Frequency N	Percentage %
Traditional method	64	50.8
Slides presentation	26	20.6
Traditional and slides combination	36	28.6

DISCUSSION

The present study mainly focused on computer and internet use in medical education and found that medical education is progressively becoming computer- and Internet-based. Furthermore, younger academics are more likely to utilize it. The most notable finding, however, was that the majority of students continue to choose blackboard lecturing for superior content mastery. The survey found that, while the majority of instructors (84.9%) employ computerized educational materials in the form of slide projections, a considerable minority (15.1%) still use conventional techniques like blackboard. Furthermore, even among those who use slide projections, many teachers combine them with conventional techniques, bringing the overall number of those who use traditional methods to 50.8%, suggesting a kind of merit in the old way. It is important to note that, while the Internet is utilized by a big number of instructors, their number is still lower than those who teach using PowerPoint projections, either totally or partially, highlighting the simplicity and convenience felt when utilizing slide projections. However, it is understandable that all of these internet users are part of the computer user group. An intriguing finding is that a significant number of instructors access the Internet via their smartphones, despite the fact that the majority use laptops or desktop computers. Because the great majority of people had their own computers, just two people utilized the library to access the internet.

Numerous research showed that younger faculty members in medical schools utilize the Internet for medical information/drug information more frequently than their elders, with a statistically significant difference; however, no gender-based link was discovered [13-15].

The most intriguing discovery is that pupils clearly favor conventional methods of instruction [16]. Contrary to common assumption, the majority of them clearly preferred the conventional teaching approach over the more modern computerized method. When we add the amount of students who prefer a combination of conventional and computerized teaching techniques, we see that an overwhelming prefer traditional methods in some form over pure computerized instruction [17].

The current study assessed medical students' knowledge and use of the internet. We discovered significant gaps in computer abilities among both male and female pupils. According to the report, 88.3% have their own personal computer or other internet-accessible device. It is higher among Mangalore college students [18] and also higher than the Bangladesh study group (66.8%) [19]. This is positive and may be attributable to cost as well as the simple availability of next generation mobile phones that can access the internet and are portable [20].

The internet was the most popular source of knowledge for students in the current research, followed by textbooks. This suggests that the usage of the internet for obtaining necessary information is expanding. A previous study found comparable results [21], however another study discovered that textbooks were the preferred medium for the majority of undergraduate medical students. In the survey, we discovered that only 36.11% of students utilize the internet on a daily basis, which is lower than in other nations [22, 23]. Students should be encouraged to utilize electronic resources for their research.

CONCLUSION

The present study concluded that Medical education has become increasingly computer-based and Internet-based. Furthermore, its use is more common among younger professors. However, the most noteworthy conclusion was that the majority students still choose chalkboard lecturing for better knowledge of the material.

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