Use and Need of Computer among Medical Students

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Abstract

As the present era is of science and technology, computer one of its grains gradually catering every field of the world including field of medicine. This study was done to enlighten the perspective and implications of computer among medical students with the objective to assess the use and need of computer among them. A cross sectional study was carried out on 125 medical students including undergraduates (UGs) and post graduates (PGs). All were interviewed by using pretested, semi structured Proforma.

Out of 125 students 87% UGs & 100 % PGs having computer knowledge. Majority of students 82 (73.21%) have got their computer knowledge through self learning. 1 to 2 times per week to once in month was most common frequency among UGs 69(79.3%) and in PGs it was daily (approx) to 2 to 3 times per week use 22(88%). 98.8% UG’s use computer < 2 hr/day as compared to PGs >2 hr/day (88%). Cyber café & their institution were most common places for use of computer in UGs (77.01%) in contrast to PGs who use same in personal rooms (86%). Internet & email was most common purpose of use of computer in UGs (95.4%) where as in PGs it was for study (100%). Majority of PGs (100%) & UGs (95%) got agreed for inclusion of computer in medical curriculum which might boost up their career development.

There is urgent need of inclusion of computer and internet in the curriculum of medical students to make their career more bright and nurtured.

Keywords: Medical student; Use of computer; Need of computer

Introduction

Man, ever since this big creature of god came in to light one thing had also been evolved with the evolution of man and this big name people call computer. Over the years technology has touched its acme and now it is not confined to developed countries, developing countries like India has kept pace very stupendously with the world in this field of modern technology and no where counted less than others. A grain of this modern technology called computer has been carving this field of modern technology and no where counted less than others.

Majority of PGs (100%) & UGs (95%) got agreed for inclusion of computer in medical curriculum which might boost up their career development.

Aims and objectives

1. To assess the use of computer for various purposes among medical students.
2. To identify the need of computer and internet.

Methodology

Study type: A Cross Sectional Study

Study duration: Over the duration of six month (from 1st of Feb 07 to 1st of July 07).

Sample population: Medical Students of G.R. Medical College, Gwalior, M.P.

Sample frame: Medical students of first proff., second proff., Final proff., internship and post graduate students.

Sampling design and selection of sample: Stratified sampling method was adopted for the selection of sample.

A sample of 125 medical students of G.R. medical college Gwalior was selected for this study out of all strata of medical student’s i.e. first proff, second proff, Final proff, internship and post graduate students.

In detail, a list of students of first proff., second proff, final proff.

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Internship and post graduation was prepared with the help of staff of Department of Community Medicine G.R. Medical College Gwalior. So five different list were prepared each one for first prof., second prof., final prof., interns and postgraduate students respectively. The total no. of students was 600, 120 students for each batch. Following this 25 students were selected from each list, who gave their verbal consent to participate in the study.

**Data collection and analysis**

After selection of the students they all were interviewed for assessment of their computer knowledge. It was accomplished by using a simple question paper which was including some basic questions regarding computer i.e. what is computer , what is internet, what is MS office etc. those who gave the answer of three or more than three questions were considered having knowledge of computer.

After selecting the group of students having computer knowledge, they all were interviewed with the help of a pre-tested, semi structured Performa consist of various questionnaires regarding use of computer. The filled Performa were collected and responses of students were thoroughly scrutinized and analyzed in the Dept. of Community Medicine, Manually and by using suitable statistical software on computer.

The statistical methods which were applied e.g. percentages, proportions, chi-square test and fisher exact test. In all 2 by 2 tables where expected frequency was less than 5 in any cell fisher exact test was used instead of chi-square test because of invalidity of chi-square value.

**Results**

In this study, it was found that out of all (100) UG students 87(87%) were found having computer knowledge on the basis of responses (i.e. > 3 correct answers) given by the students interestingly all PG students 25 out of 25 (100%) had the knowledge about computer (fisher exact test P-0.049) (Table 1 and Table 2).

Out of all 112 students having computer knowledge, maximum have got their computer knowledge by nothing else than only by self learning 82(73.2%) (Figure 1).

Frequency of computer use among UG students was most commonly 1 to 2 times per week to once in month 69(79.3%), whereas among PG students it was daily (approx) to 2 to 3 times per week used instead of chi-square test because of invalidity of chi-square value.

**Table 1:** Distribution of medical students on the basis of knowledge of computer.

<table>
<thead>
<tr>
<th>Knowledge of computer</th>
<th>Postgraduates n=25</th>
<th>Total UGs n=87</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes</td>
<td>25 (100%)</td>
<td>87 (100%)</td>
</tr>
<tr>
<td>No</td>
<td>0 (0%)</td>
<td>3 (12%)</td>
</tr>
</tbody>
</table>

*UG- Undergraduate
* Prof. – Professional

86(98.8%) UG students said that they use computer < 2 hour per day whereas 22 (88%) PG students use computer > 2 hour per day (P<0.001) (Table 4).

67(77.01%) UG’s use computer at cyber café & their institution whereas 22(88%) PGs said they use computer most of time in their personal rooms (P< 0.001) (Table 5).

Internet & e-mail were the most common purpose for use of computer 83(95.4%) followed by study purpose 67(71.26%) among UG students. Among PG students study was the most common purpose for the use of computer 25(100%) followed by referring English dictionaries and writing letters, 23(92%) & 22(88%) respectively (p<0.001) (Table 6).

95(95%) UGs and 25(100%) PGs agreed that there should be provision of computer in medical curriculum (fisher exact p-0.321). 93(93%) UG’s and 25(100%) PGs opined that provision of computer will enhance the knowledge and attitude of students (fisher exact p-0.20). 93(93%) UG’s and 22(88%) PGs said that there should be free availability of computer and internet in the institute (fisher exact p-0.88). 92(92%) UG’s and 24(96%) PGs argued that computer is helpful in their career development (fisher exact p-0.42) (Table 7).

**Discussion**

Information technology (IT) has radically changed the way that many people work and think [7]. Health care professionals can no longer ignore the application of information technology to health care [8]. Doctors need information skills to deliver health care in the 21st century. There is concern that those who trained before the 'information age' will be inadequately equipped for their work [9]. India has made great stride in the field of telemedicine and e-health. Most
of the telemedicine activities are in project mode supported by Indian Space Research Organization, Department of Information Technology which is being implemented through state governments. Few corporate hospitals have recently developed their own telemedicine network. Around 400 telemedicine nodes are in place across the country. Ministry of Health, Government of India is currently initiating evaluation exercise so as to decide investment on e health in the 11th plan five year plan. Besides, some of the nation wide projects are being taken up by the Ministry of Health e.g. Integrated Disease Surveillance Project (IDSP), National Cancer Network (oncoNET), Medical Colleges Network and Digital Medical Library Network. Telemedicine Standardization and Practice guidelines are being developed by the IT department. National Telemedicine Task Force has been set up by the Health ministry. External Affairs Ministry has taken up e-Africa and SAARC Telemedicine Network Projects. Above said areas hold great degree of potential in use of telemedicine and e health tools to facilitate healthcare across country boundary. Licensing, ethical and legal issues needs to be addressed to promote integration of these electronic and information technology tools to facilitate global healthcare.

Ministry of Health & family welfare (MOH&FW) is currently implementing Integrated Disease Surveillance Programme network which will connect all district hospitals with medical colleges of the state to facilitate tele-consultation, tele-education/ training of health professionals and monitoring disease trends. It has funded few pilot tele-ophthalmology and rural telemedicine projects. Very soon all the government medical colleges are getting networked with high bandwidth fibre to facilitate e-CME programme.

Two government agencies, National Informatics Center (NIC) and Indian Council of Medical Research (ICMR), have established the Indian Medical Literature Analysis and Retrieval System (MEDLARS) Center to cater the information needs of medical community of India. Ministry of Health & Family Welfare, Government of India is setting up a Teletraining Center at the National Institute of Health & Family Welfare, New Delhi to create facility towards tele-training of public health professionals across the country through various e-learning modules to switch over to more efficient electronic mode from currently practiced on-site training module. This initiative would boost capacity building in public health as has been envisaged under National Rural Health Mission. MOH&FW has set up a National Task Force on Telemedicine in the year 2005 which is addressing various issues in telemedicine in national context. Like, to enable telemedicine centers in teaching institutions to impart training to all government medical/ dental/nursing colleges in three years time Medical Council of India is considering introduction of medical informatics in the course curriculum of graduate medical students [10].

<table>
<thead>
<tr>
<th>Use of computer</th>
<th>Location of use</th>
<th>First prof. n=20</th>
<th>Second prof. n=20</th>
<th>Final prof. n=22</th>
<th>Intern-ship batch n=25</th>
<th>Postgraduates n=25</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Personal room (e.g. in house, friend’s room, hostel room etc.)</td>
<td>3(15%)</td>
<td>5(25%)</td>
<td>2(9%)</td>
<td>10(40%)</td>
<td>22(88%)</td>
</tr>
<tr>
<td></td>
<td>Others(e.g. Cyber cafe, Institute)</td>
<td>17(85%)</td>
<td>15(75%)</td>
<td>20(91%)</td>
<td>15(60%)</td>
<td>3(22%)</td>
</tr>
</tbody>
</table>

Chi-square -40.50, df-4, P=0.000001

<table>
<thead>
<tr>
<th>Use of computer</th>
<th>Purpose of use</th>
<th>Total UGs n=87</th>
<th>Postgraduates n=25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entertainment(e.g. watching movie, Audio players, games etc.)</td>
<td>62(71.26%)</td>
<td>25(100%)</td>
<td></td>
</tr>
<tr>
<td>writing letters</td>
<td>57(65.5%)</td>
<td>20(80%)</td>
<td></td>
</tr>
<tr>
<td>English language dictionaries</td>
<td>04(4.99%)</td>
<td>22(88%)</td>
<td></td>
</tr>
<tr>
<td>Internet and email</td>
<td>61(70.11%)</td>
<td>23(92%)</td>
<td></td>
</tr>
<tr>
<td>Chatting</td>
<td>83(95.4%)</td>
<td>25(100%)</td>
<td></td>
</tr>
<tr>
<td>Internet banking</td>
<td>57(65.51%)</td>
<td>12(48%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>08(9.19%)</td>
<td>7(28%)</td>
<td></td>
</tr>
</tbody>
</table>

*UG- Undergraduate
Chi-square -46.48, df-5, P=0.000001

| Q.1* | Yes   | 95(95%) | 25(100%) |
|      | No    | 5(5%)   | 0(0%)    |

| Q.2** | Yes  | 93(93%) | 25(100%) |
|       | No   | 7(7%)   | 0(0%)    |

| Q.3*** | Yes | 93(93%) | 22(88%) |
|        | No  | 7(7%)   | 3(12%)  |

| Q.4**** | Yes | 92(92%) | 24(86%) |
|         | No  | 8(8%)   | 1(4%)   |

Fisher exact test One tailed P

<table>
<thead>
<tr>
<th></th>
<th>Total UG N=100</th>
<th>Total PG N=25</th>
<th>Fisher exact test One tailed P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.1* Yes</td>
<td>95(95%)</td>
<td>25(100%)</td>
<td>P=0.321</td>
</tr>
<tr>
<td>Q.2** Yes</td>
<td>93(93%)</td>
<td>25(100%)</td>
<td>P=0.20</td>
</tr>
<tr>
<td>Q.3*** Yes</td>
<td>93(93%)</td>
<td>22(88%)</td>
<td>P=0.88</td>
</tr>
<tr>
<td>Q.4**** Yes</td>
<td>92(92%)</td>
<td>24(86%)</td>
<td>P=0.42</td>
</tr>
</tbody>
</table>

Table 5: Distribution of medical students according to location of use of computer.

Table 6: Distribution of medical students according to purpose of use of computer.

Table 7: Distribution of medical students on the basis of need of computer.
As compared to developed countries like USA, Canada developing countries like India is having very scarce resources, deprived funds, weak public health infrastructure etc and in this kind of scenario, use of information technology may be one of cost effective measure to foster the health of people of India, especially those who are living in hard to reach areas where health accessibility is very poor.

Present study revealed that majority of proportion of UGs and PGs have more or less knowledge regarding computer (87 % & 100%). more or less was found by Inamdar et al., knowledge was higher in PGs (93.3%) than UG's (84.5%) [11]. PGs are having more knowledge than UGs this may because of majority of PGs are having their own computer and they have more time to spend over computer & internet than UGs where majority of them use computer in cyber café and not having their own computer. Moreover there is no as such computer facility for the students in their institution nor are they being trained for computer use, this may also be one of halt for the computer knowledge among the medical students. Iliyasu Z et al. quoted Age, gender, computer ownership and formal computer training significantly influenced computing knowledge [8]. Ward R et al quoted that attitudes of health care professionals can be a significant factor in the acceptance and efficiency of use of IT in practice [12]. In recent studies of doctors’ use of online evidence, it has been reported that over 80% of practitioners studied believed that the use of electronic information resources has the potential to improve patient care [4,5]. Frequency, hours of use were more in PGs (daily to 2 to 3 times/ week-88%), > 2hrs/day-88%) than UGs (1 to 2 times / week to once in month-79.3%, < 2 hr/day-98.8%). Again it may because of UGs are not having their own computer nor they have time for it. Moreover they use computer mostly at cybercafé where they need to pay some bucks and some time it not easily accessible.

Some of sites are paid at internet where they can’t easily access like various journals, books etc which may be most useful and productive uses of computer and internet than anything else. Singh M et al. quoted health and financial resources in developing countries like India are limited and unevenly distributed. In addition, geographic and socioeconomic factors prevent transfer of rapid information between patients and healthcare providers. By the use of telemedicine, through broadband high capacity network connections, we can cross these barriers to provide timely medical care in the remotest corner of the country [13], lim TA et al. found in his study on the final year medical students 53% of students spent 3 hours or more each week on computer [14].

Where PG students use computer basically for study purposes (100%) UG students on the other hand more often use computer for internet and emailing (95.4%). this shows they are not properly sensitized for the most productive and fruitful uses of computer and internet like teledermicine, e health, accessing journals etc. so it demands the inclusion of computer training during their tenure. Internet has also revolutionized the medical practice with the increasing use of teledermicine and evidence based medicine [15]. Inamdar et al found the writing letter was the most common use of computer among PG’s & UG’s (100%, 87.5%) [11]. Rashmi Sharma et al found UG students were using computers for entertainment and general information. Among PG student’s trend was to use computers generally for thesis and research work [16]. But they have not tried to assess the need of computer among the medical students which was accomplished by present study as both UG and PG have got agreed on the urgent need of computer for the students which will be helpful in the development of their carrier and enhance their knowledge. This need can be fulfilled by imparting a essential training programme of computer for the medical students as well as free availability of computer and internet in their own institution so that they don’t get carried away towards the unproductive use of this modern technology by spending their lots of pocket money and they can utilize it in most productive and fruitful manner to achieve our goal of telemedicine and e-health. Devitt N et al. found 44% of doctors reported no skills in database software, identifying this as a training need [17]. A local level study on selective small medical students sample were the limiting factors of this study. A state or nationwide study would be more useable and applicable for planners & policy makers.

Conclusion

There is urgent need of inclusion of computer and internet in the curriculum of medical students in a bid to make their carrier more bright and nurtured, and enable them to keep pace with the medical students of developed countries. It will definitely help us to achieve the goal of e health.

References