

# Does gender role influence the pattern of internet and computer use among physiotherapy undergraduates?

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## Abstract

Gender roles affect some components of life and whether this difference persists in using advanced technologies such as computers and internet is unclear. Aim of this study was to compare the computer and internet using patterns among male and female physiotherapy undergraduates. Methods: Out of the registered physiotherapy undergraduates, 92 participated in the study with a response rate of 80%. A pre-tested self-administered questionnaire was used to collect data from students in first to final academic years. Data analysis was done using SPSS version 20.

Results: Out of participants, 37% (n=34) were males and age ranged from 19 to 26 years. Majority of 95.7% (n=88) participants owns a computer and 64.1% (n=59) mainly use it for entertainment. Females tend to seek more formal learning computer classes compared to males. Majority of study participants spend more than 8 hours per week to go online and values were 29.4% (n=10) for males and 25.9% (n=15) for females.

Conclusion: A significant relationship was seen between gender and formal learning classes for computers. Usage time and purposes did not show any difference among genders. Internet was used mainly for entertainment and secondly for social communication in both genders.

*Keywords:* computer literacy, internet, undergraduates, students

## Background

In the past few decades, with the advancement of telecommunication, the use of internet and computers has increased rapidly (Ajuwon, 2003; Bubric and Hedge, 2016; Internet society, 2019; Weiser 2000). According to the internet usage statistics, the number of internet users in 2019 was estimated as 4.5 billion and was 58.7% of the total world population (Internet society 2019). Highest ratio between computer users and country's total population was found in North America of 94.6% and second highest was 87.2% in Europe. Highest internet users were found in Asia of 50.3%, in Europe of 15.9% and in Africa of 11.5% from the total users around the World (Internet society 2019).

Internet and computer use within Sri Lanka is rapidly increasing. Household computer use in

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Sri Lanka has surged from 22.5% in 2016 up to 22.9% in 2018, which has extended beyond desktops and added up laptops to this number. Out of the 2018 computer users within the country, 39.5% was spread in urban areas, 20.3% in rural and 4.9% in estate sector (Department of Census and Statistics, 2018). The number of people who can use a computer independently, which is defined as the computer literacy, was 27.5% according to 2018 statistics in Sri Lanka. However, the highest of these literates were in urban areas of the country and were about 38.4% (Department of Census and Statistics, 2018). Within Sri Lanka, there is a persisting discrepancy of computer literacy, and factors such as gender and living area are more likely to contribute towards it. Males compared to females, and urban western province compared to other parts of the country seem to have a high literacy rate (Department of Census and Statistics, 2018). Despite of these discrepancies, there is an increase in computer use within the country and around the world, due to many advantages the computer and internet offer for its users.



Some reasons behind the popularity of internet are instant access to unlimited information (Ajuwon 2003), rapid communication via email, whatsapp, social engagement via Facebook, Instagram and diverse range of pleasure activities such as online gaming (Lee et al., 2017; Wan and Chiou 2006). All sectors including higher education and health have been caught in these rapid changes in technology and internet use (Ranasinghe et al., 2012; Thanuskodi, 2016; Unnikrishnan et al., 2008). Use of these information systems in different professions, especially in medicine and other health care services, has improved the quality of patient care by bringing evidence-based treatment information to the tip of the finger (Unnikrishnan et al 2008). With the increase in popularity, the purposes have changed from basic use to multipurpose use and it is important to identify these differences in undergraduates because they will be the future professionals in health sector (Thanuskodi, 2016). Male and female undergraduate students have different preferences and therefore if that affects the use of these technologies is a question which needs to be answered.

Gender difference seems to exist in many areas of life such as mental health, exercise attitudes and cognition. A study by Lee et al. (2020) showed that in males, mental health attitudes were significantly lower than females in same age group and was associated with social support, depression levels and being married. They further stated that increased mental health literacy had more positive mental health outcomes in both genders. Another study done in Taiwan reported that females aged between 40 – 64 tend to exercise regularly and think that spending money on exercise is worthwhile (Mao, Hsu, Lee, 2020). Another study from India reported that cognitive scores were reduced in females compared to males after confounding factors such as education, height, cast, being married and physical health status were matched. They concluded that females can be a disadvantaged group in cognitive health compared to their counterparts (Singh, Jasilionis, Oksuzyan, 2018). A common assumption is that females are more anxious regarding the use of new technology and are slower in adjusting to them compared to males. This has led to many research studies, which highlight several gender differences in the use of information technology. A study done in college students has shown that females use internet more often for communication as compared males, and males tend to use it for information gathering and entertainment

(Ajuwon, 2003). Several studies discussed the differences in computer cognition among genders. Men use more email and chat rooms than females and are more active in computer games (Lee et al., 2019). Furthermore, they seem to be more confident in their computer skills than females (Li and Kirkup, 2007; Weiser, 2000; Jones, 2002)

Physiotherapy undergraduates are a group who get through a competitive barrier examination to enter the University and look forward to becoming health care professionals. Admission statistics indicate that high number of females get qualified for university admission compared to males in Sri Lanka each year. Furthermore, these qualifying students belong to different geographical areas of the country which can further promote discrepancies in computer and internet use (Statistical Reports, University Grants Commission, 2018). If a gender difference exists in using computers and internet, it can affect their professional achievements and subsequently for patient care. Therefore, it will be necessary to take measures to minimize these discrepancies early in their careers. This study therefore aimed to identify the current pattern of computer and internet usage among the undergraduates and any relationship between genders.

## Methods

Participants aged between 20 – 35 years and registered physiotherapy undergraduates in their 1<sup>st</sup> year to final year (4<sup>th</sup> year) were selected for the study. Participants who fulfilled the inclusion exclusion criteria were recruited using convenient sampling. Students who are registered in the BSc physiotherapy course and in their first to final years were included in the study. Students who were absent from their studies or on medical / long term leave during data collection were excluded from the study. Sample size was not calculated, as the entire population of registered physiotherapy undergraduate students, was included in the study. The study was approved by the Ethics Review Committee of the Faculty of Medicine, University of Colombo, and permission was obtained from the Dean and the coordinator of the programme. Written informed consent was obtained from all participants after explaining the study objectives, methods and the opportunity was given to withdraw from the study at any time if they wanted to do so.

Data were collected at a convenient time for the participants and was administered individually in a secure place to ensure confidentiality. The collected data were then entered to a computer, to which only the principal investigator had access. The sheets were stored under lock and key after the data collection.

#### Questionnaire

Data was collected using a pre-tested semi structured questionnaire regarding their computer and internet use. This self-administered questionnaire was developed in English with items on socio-demographic characteristics, their computer and internet use. This questionnaire was developed using existing literature (Thanuskodi, 2016; Unnikrishnan et al., 2008) and discussions with the subject experts. It was then pre-tested in a group of B.Sc. Physiotherapy graduates and was modified accordingly. Significance in gender preference was assessed in computer and internet use under the categories of ownership, access, purposes, previous experience and time spent on usage.

Statistical analysis was conducted using SPSS version 20 software package. Standard descriptive methods were used to analyse baseline characteristics and computer and internet usage. Chi square test was used to identify a relationship between gender and preference of computer and internet use.

## Results

#### Baseline characteristics

Ninety-two students out of total 115 registered students from all academic years participated in this study with the respondent rate of 80%. Out of the study participants, 37% (n=34) were males and majority of them were in age group between 19 to 26 years, with only two participants of higher age group. Majority of the students (n=81, 88%) were Buddhists, 6.5% (n=6) Catholic and remaining Muslims, with one from abroad. Previous employment before

entering the University was identified as a key factor in gaining experience about computer and internet use because many of employments will either fully or partially be based on computer work. In the study sample, 21.7% (n=20) had previous occupations before enrolling to the University. Out of which, 4.3% (n=4) are still engaged in part time work. Out of the participants engaged in previous employment, 70% (n= 14) had used computers with or without internet as a part of their work.

#### Pattern of computer use

Majority of 95.7% (n=88) own a computer (desktop /laptop) and the remaining have access to one. Out of males, 91.17% (n=31) and out of females 64.8% (n=57) own a computer. All participants used computers for many reasons (Table 1). Both genders showed similar pattern of using computers with the first and commonest reason being for entertainment, second for studies and third for finding new information (Table 1). Out of the participants, 73.9% (n=68) had learned computers in formal methods. From these, 81.03% (n=47) females and 61.76% (n=21) males had taken some sort of learning. However, females tended to seek significantly high number of computer classes compared to males (p=0.042). Places of learning varied from private classes to school and online mode (Table 1).

When discussing the purposes of computer use in two genders, 61.76% (n=21) of males and 65.51% (n=38) of females used it for entertainment. Second commonest reason was for studies. Out of females, 53.44% (n=31) and out of males, 38.23% (n=13) used computers for education. Percentages of other purposes are shown in Table 1. In this study sample, 82.35% (n=28) of males and 93.1% (n=54) females used computers at their home or hostels. Out of the participants, 60.86% (n=56) spent less than 3 hours per day on computers and this was 70.58% (n=24) in males and 55.17% (n=32) in females.

**Table 1: Pattern of computer use in each gender of the study sample**

Characteristics		Males (n=34)		Females (n=58)		Total (n=92)		Significance P =
		N	%	N	%	N	%	
Computer use	Owns a computer	31	91.17%	57	64.8%	88	95.7%	NS
Purpose*	Entertainment	21	61.76%	38	65.51%	59	64.1%	
	General information	12	35.29%	20	34.48%	32	34.8%	
	Research & thesis	4	11.76%	15	25.86%	19	20.7%	
	Studies	13	38.23%	31	53.44%	44	47.8%	
	Other (communication)	1	2.94%	1	1.72%	2		
Formal learning on computer use	Yes	21	61.76%	47	81.03%	68	73.9%	0.042
Place of learning	Private classes	16	47.05%	23	39.65%	40	42.39%	NS
	School	1	2.94%	6	10.34%	7	7.6%	
	Both private class & school	0	0%	9	15.51%	9	9.78%	
	Others (friends)	3	8.82%	9	15.51%	12	13.04%	
Time spent on computers per day	Less than 3hours	24	70.58%	32	55.17%	56	60.86%	NS
	4 – 7hours	7	20.58%	23	39.65%	30	32.6%	
	Above7 hours	3	8.82%	2	3.44%	5	5.43%	

\*Multiple response question

Most students use computers either at their homes or in hostels (89.13%) (Figure 1). It was interesting to identify that even though

students are provided with a computer laboratory at the University, very few used it.

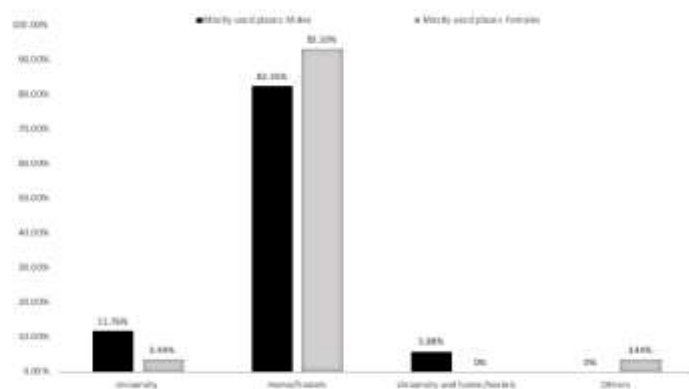


Figure 1: Frequently computer access places of the study sample

**Figure 1: Frequently computer access places of the study sample**

**Pattern of internet use**

Majority of participants had started using internet before they enrolled to the university. Out of the sample, 76.1% (n=70) had used internet at home while 20.7% (n=19) had accessed internet in the university. When considering the 34.9% males and 65.1% females had internet access in their homes. When considering the percentage of access to

the total number of each gender, 93.1% of females and 85.29% of males had access to internet.

About Sixty eight percent students (n=63) preferred internet over textbooks, out of which 38.1% were males and 61.9% were females. The reasons behind these preferences are outlined in Table 2 out of which 22 agreed that

it was time saving, 37 that it had easy accessibility, 18 agreed it had latest source of information and 17 on that it had wide spectrum of information.

encouraged in teaching activities, while 56.5% (n=52) were satisfied with computer assisted teaching within the course and 34.78% (n=32) were not satisfied with it.

Majority of 89.1% (n=82) students agreed that computer and internet use should be

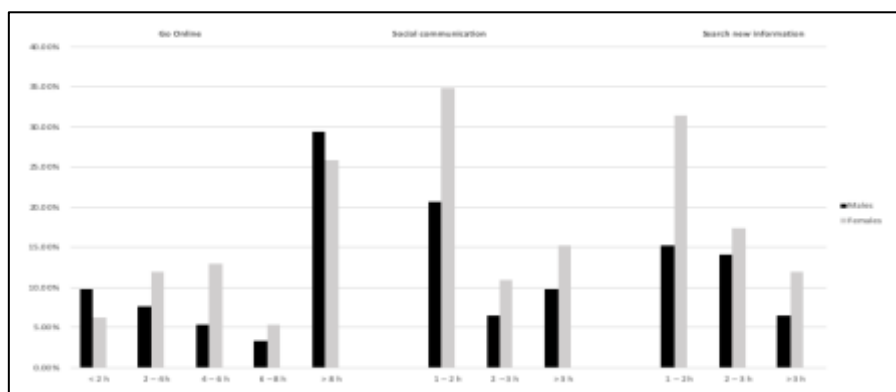
**Table 2: Pattern of internet use in each gender of the study sample**

Characteristics		Males (n=34)		Females (n=58)		Total		Significance
		N	%	N	%	N	%	
<b>Start using internet</b>	University	6	31.6%	13	68.4%	19	20.65%	Not tested <sup>#</sup>
	Home	25	35.7%	45	64.3%	70	76.08%	
	Previous job	2	100%	0	0%	2	2.17%	
	Cyber café	1	100%	0	0%	1	1.1%	
<b>Internet access at home</b>	Yes	29	34.9%	54	65.1%	83	90.21%	NS
<b>Preference of internet over text books</b>	Yes	24	38.1%	39	61.9%	63	68.47%	NS
<b>Reasons for internet preference over using text books – reasons*</b>	Time saving	6	27.3%	16	72.7%	22	22.68%	
	Easy accessibility	13	35.1%	24	64.9%	37	38.14%	
	Latest knowledge	3	16.7%	15	83.3%	18	18.55%	
	Wide spectrum of information	6	35.3%	11	64.7%	17	17.52%	
	Others	1	33.2%	2	66.8%	3	3.09%	
<b>Current computer assisted teaching</b>	Satisfied	19	36.5%	33	63.5%	52	56.52%	NS
	Not satisfied	11	34.4%	31	65.6%	32	34.78%	
	Don't know	4	50%	4	50%	8	8.69%	

\*Multiple response question; not tested<sup>#</sup> due to small number in categories; NS – non-significant

Highest percentage (calculated as total for each gender) of both male and female participants use internet more than 8 hours per week and the values were 29.4% (n=10) and 25.9% (n=15) for males and females respectively. Second highest was less than 2 hours per week and values were 9.8% (n=9) and 16.3% (n=15) for males and females. Out of male participants, 7.6% (n=7) use internet for 2 - 4 hours, 5.4% (n=5) for 4 -6 hours and 3.3% (n=3) for 6 -8 hours. Out of female participants, 12% (n=11)

use for 2 -4 hours, 13% (n=12) for 4 -6 hours and 5.4% (n=5) for 6 -8 hours. Many participants use 1 – 2 hours per week for social communication. Out of male participants, 20.7% (n=19) use for 1 -2 hours, 6.5% (n=6) for 2 -3 hours and 9.8% (n=9) above 3 hours. For female participants, values were 34.8% (n=32), 10.9% (n=10) and 15.2% (n=14) respectively. Time spent to search new information showed a similar pattern to social communication where 15.2% (n=14), 14.1% (n=13) and 6.5% (n=6) males spent 1 -2 hours, 2 -3 hours and more



**Figure 2: Time spent on internet for different purposes**  
 South-East Asian Journal of Medical Education  
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than 3 hours respectively. For females, the values were 31.5% (n=29), 17.4% (n=16) and 12% (n=11) for the said hours. However, there was no statistically significant difference in these percentages.

Purposes of internet use in each gender Under the purposes of internet use, males had highest percentage for entertainment and

secondly for social communication followed by engagement in work. Females also show similar pattern of distribution. Most popular communication tool seems to be emails and instant messaging, while chat rooms also showed popularity among both genders.

**Table 3: Purposes of using Internet and commonly used communication tools**

Characters		Males	Percentage as a total from gender	Females	Percentage as a total from gender	Total	Significance
		N	%	N	%	N	P =
<b>Reasons for using Internet</b>	Social communication	31	91.17%	50	86.2%	81	NS
	Engaged for work / studies	21	61.76%	41	70.68%	62	NS
	Entertainment	32	94.11%	56	96.55%	88	NS
	Professional communication	17	50%	25	43.10%	42	NS
	Business	2	5.88%	2	3.44%	4	NS
<b>Communication tools used through Internet</b>	E mail	33	97.05%	51	87.93%	84	NS
	Instant messaging	15	44.11%	23	39.65%	38	NS
	Web board	3	8.82%	9	15.51%	12	NS
	Chat rooms	17	50%	29	50%	46	NS
	News groups	11	32.35%	17	29.31%	28	NS

NS – non-significant

Both genders use computers for multiple reasons and no apparent pattern could be seen. Out of the purposes for using computers checked in the sample, none of the variables were significantly different in the two genders.

Time spent on Internet

Females tend to spend more time to go online than males. This difference was seen in both social communication and searching new information. Time spent more than 8 hours, 29.4% was males and 25.9% was females. Social communication is another important aspect, which is evolving in the new generation. Out of the sample, 34.8% of females and 20.7% of males spend between 1 -2hours in this purpose. Both genders spend between 1 – 2 hours in searching for new information, out of which 31.5% were females and 15.2% were males.

## Discussion

This study was conducted in the total group of registered physiotherapy undergraduates in the University of Colombo and they represent the Sri Lankan undergraduates in health professions education. All the participants had used computers at the time of the data collection. In this sample, 95.7% had their own computer,

this number was higher compared to previous studies (Lee, 2017; Munabi et al., 2015; Ranasinghe et al., 2012; Unnikrishnan, 2008). A study from Ugandan public medical schools found that 75.3% of students owned a computer (Munabi et al., 2015). A study by Ranasinghe et al., (2012) showed 77.3% owned a computer. In US adolescents, values were slightly higher compared to Uganda in which 82.1% adolescents used computers (Lee, 2017). A study at costal South Indian medical college reported that 79% first- and second-year medical students, 38.5% final year medical students, 68% postgraduate students owned a computer. However, this variability could be due to the fact that in the recent years popularity of computers and computer assisted teaching is increasing.

In this sample, computer literacy was 100%. The reason behind this high literacy might be the mandatory computer course at beginning of the programme. This finding was similar in a cross-sectional study done in Medical undergraduates in 2012 in the same Faculty, Sri Lanka (Ranasinghe et al., 2012). The authors categorized students in to low, intermediate, high and very high literacy rates and found that 47.9% were in low and intermediate level of computer literacy. In our

study, we did not categorize literacy levels but adhered to the definition used by the Department of Census and Statistics (2018). However, literacy was lower in a study done in Nigerian medical and nursing students, where literacy was 24.1% in nursing students 58% medical students (Ajuwon, 2003) and one reason outlined by this study was that undergraduates did not have access to a computer.

Female students tend to seek more computer classes compared to male students. A study by Ranasinghe et al., (2012) found that 59.7% of students followed a formal computer course before entering to the University. In our study, percentage of students who have undergone a formal learning in either private classes, school or both were 60.86% and showed similar results to Ranasinghe et al., (2012). However, they showed there was no significant difference among genders for computer learning which was in contrast with our study finding which indicated that females showed a significant higher tendency for formal computer learning compared to males.

Considering the gender preferences, other than the formal learning of computers, none were statistically significant. Thus, computer or internet use did not differ among both genders. This finding was similar to studies by Thanuskodi, (2016); Shaw and Gant, (2002); Weiser, (2000) showing that there is no difference in use of computer or internet among different genders. Shaw and Gant (2002) suggest that males will be more comfortable with internet use compared to females. Undergraduate male and female students were introduced to five structured chat sessions and they investigated if there is a gender difference in continuing the use of internet communication tools. However, they concluded findings very similar to ours showing no difference in computer use. Weiser, (2000) concluded that previous experience in computer and internet use can produce a gender difference, however, our study participants undergo similar computer assisted learning and therefore it is possible not to observe a significance difference. Computer literacy might be one major reason why the hypothesis of gender influence in computer and internet use may not hold true.

Out of the participants, 34.9% males and 65.1% females had internet access in their homes and they used internet mainly for entertainment and secondly for social communication. This was slightly different from studies from other countries (Ajuwon, 2003; Kir et al., 2004; Li and Kirkup 2007; Maharoo et al., 2012;

Unnikrishnan et al., 2008). A study from Costal India reported most students used it for social communication such as emailing and next for entertainment. Kir et al., (2004) reported that the most common use of internet was email communication.

There were few limitations identified in our study. We used a self-administered questionnaire to identify the computer and internet use which can be very subjective. Using more objective measure such as logging time to learning management systems or measuring competencies in computer skills would give better understanding about the gender influence. Our study sample had more females thus results might be skewed towards it. Participants were in different academic years thus might have an influence on the usage time of internet and computer use.

## **Conclusion**

There was no significant gender difference in computer and internet use in our study except for formal learning of computers. Females tend to seek more computer classes than males.

## **Acknowledgement**

Authors would like to thank all the participants for their contribution

Conflict of interest – None

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