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Knowledge and Access to Information and Communication Technologies (ICTs) Services Among Research Faculties of CCS HAU, Hisar

Meenu[1], Dr. Vandana Verma[2], Dr. Manju Dahiya[3], Raveena Rani[4], Sachin Jangra[5]

[1]Ph.D. Scholar, Department of Extension Education and Communication Management, Chaudhary Charan Singh Haryana Agricultural University Hisar, Haryana, 125004
[2]Assistant Prof., Department of Extension Education and Communication Management, Chaudhary Charan Singh Haryana Agricultural University Hisar, Haryana, 125004
[3]Associate Director (BS/HS), Chaudhary Charan Singh Haryana Agricultural University Hisar, Haryana, 125004
[4]Ph.D. Scholar, Food and Nutrition, Chaudhary Charan Singh Haryana Agricultural University Hisar, Haryana, 125004
[5]Operation Manager (JIYYO Innovations), Mohali

Abstract
The study was carried to determine the knowledge and access of ICTs services among the research faculties of CCS Haryana Agricultural University, Hisar. All the colleges of university were selected. Data were collected personally from 120 research faculties selected by simple random sampling technique through a structured questionnaire and analyzed with the help of appropriate statistical tools by using 26 version (SPSS). The findings revealed that majority of the respondents were male having age between 37-47 years with PhD with NET having service experience of 6-10 years belonged to nuclear type of family and had medium family educational status. Knowledge and access regarding MS office and online ICT applications was medium to high among majority of the respondents. Moreover, knowledge and access regarding internet were medium to low while knowledge and access regarding scientific portal/website/tools was found low among respondents.

Keywords: Information and Communication Technologies **(**ICTs), Knowledge, Access, Statistical Package for Social Sciences (SPSS)

INTRODUCTION

ICT has made access to information more accessible and widespread. The internet has become a vast repository of knowledge, providing instant access to a vast range of educational resources, research materials, news and entertainment. This access has the potential to empower individuals and bridge the digital divide. ICT has revolutionized business processes by automating repetitive tasks and improving overall efficiency. With the use of software applications, organizations can streamline operations, optimize workflows and enhance productivity. This can lead to cost savings, improved customer service and

increased competitiveness. ICT has significantly impacted teaching, research and extension activities in various fields. ICT tools assist researchers in collecting, storing and analyzing data. Software applications and statistical tools enable efficient data processing, modeling and visualization, enhancing research outcomes. ICT has had a profound impact on society, transforming the way people interact, communicate and access information. It has enabled social networking, online activism and the sharing of ideas and knowledge. However, it also raises concerns related to privacy, cybersecurity and the digital divide, highlighting the need for responsible and inclusive use of ICT. (Adelsberger *et al.,* 2013).

Embracing ICT can lead to increased efficiency, innovation and opportunities in various aspects of life and work. Researchers use ICT to access online databases, digital libraries and research articles, making literature review and information retrieval more convenient and comprehensive. ICT facilitates collaboration among researchers by providing platforms for real-time communication, document sharing and collaborative editing. This enables researchers to work together regardless of their geographical locations. ICT platforms and online journals allow researchers to publish and disseminate their findings quickly and to a broader audience, increasing the visibility and impact of their research.

ICT knowledge is essential for continuous professional development and lifelong learning among research faculties. ICT knowledge and access empower research faculties to leverage advanced tools, software and technologies in their research. Proficiency in ICT enables them to collect, analyze and interpret data more efficiently, leading to more accurate and insightful research outcomes. Access to ICT resources ensures that faculties can utilize state-of-the-art technologies and methodologies to address complex research questions. Agwu *et al.* (2008) described that the researchers (52.5%) had high knowledge and understanding of available ICTs and majority of the researchers (65%) had access to ICT facilities. Salau and Saingbe (2008) found that researchers had 87 percent access to ICT facilities, whereas extension workers had only 66 per cent access. Dzandu and Dadzie (2012) concluded that research scientists were aware of the ICT services and facilities available in the institutes, had access and utilised to improve research efforts. Ogunjobi and Fagbami (2012) found that researchers were aware of the importance of the internet for research activities and effectiveness and suggested that researchers should educate themselves on search engines and by attending courses on computer application and network must be actively and continuously sustained in order to make internet effective in all agricultural research institutes. Mugwisi *et al.* (2015) studied that majority of respondents (69.00%) had access to a computer in the office. However, 30.70 per cent indicated no access to a computer. Manchu and Vasudevan (2018) observed that the majority of researchers were aware of institutional repositories and open access publishing and eager to publish their work and most of them were unsure of how to deposit their work and were unclear about copyright issues. Robelo and Bucheli (2018) concluded that ICT offer a variety of resources for the search, analysis, selection and integration of knowledge and information to develop theoretical and methodological frameworks for the publication and dissemination of research. Kasinathan (2022) incorporated that ICT devices have made people's lives easier and more informative and they have a tremendous promise for modernising research in higher education. ICT tools should be implemented in educational institutions and all research scientists should receive training to expand their technological skills.

It is essential to ensure equitable access to ICT resources among research faculties to foster inclusivity and promote a level playing field in academic research. Institutions can play a role in providing necessary training, resources and support to enhance ICT knowledge and access for their faculties.

Keeping these facts in mind, the present study was planned with the following objectives:

Objectives: -

1. To identify the knowledge of ICT services among research faculties of CCS HAU
2. To ascertain the access to ICT services among research faculties of CCS HAU

MATERIALS AND METHODS

Study Area

The present study was conducted in the purposively selected Chaudhary Charan Singh Haryana Agricultural University, Hisar, Haryana and all the colleges of university were selected for conducting research. 120 research faculty members were selected randomly from each selected college as a sample of study. Empirical data were collected with the help of well-structured questionnaire and analysed using Statistical Package for Social Sciences (SPSS). Appropriate statistical techniques like frequency, percentage were used in the study.

RESULTS AND DISCUSSION

Knowledge and Access to ICT services among research faculties

Bloom *et al.* (1969) defined knowledge as those behaviors and test conditions, which highlight the remembering either by recognition or by recall of ideas and materials on the same phenomenon. "Access refers to the extent to which something is usable and accessible to all people, regardless of their abilities or impairments". An attempt has been made to know the distribution of respondents with respect to their knowledge and access regarding ICT facilities and results were presented under following heads.

1. Knowledge and access to Microsoft (MS) Office
2. Knowledge and access to online ICT applications
3. Knowledge and access to internet applications
4. Knowledge and access to scientific portal/website/tools

1. Knowledge and access to Microsoft (MS) Office

With respect to knowledge and access regarding MS office by research faculties, it was evident in the Table 1 that cent percent of the respondents had knowledge about storing data in word files and excel spread sheets while access was 85.8 percent. Further, majority of the respondents (85%) knew how to animate texts or objects in ppt and 70.8 percent could access this feature of MS PowerPoint. Majority of the respondents (80%) had knowledge about how to add an animated GIF to slide and 56.6 percent of the respondents could access this feature of MS PowerPoint. Further, majority of the respondents (78.3%) knew how to turn a presentation into video with audio and access was found among 61.6 percent of the respondents. Also, 78.3 percent of the respondents knew about functions to analyse data in MS Excel and 75 percent of the respondents could access this feature of MS Excel. It was observed 92 percent of the respondents knew MS Excel is repository and 62.5 percent could access this feature of MS Excel. 60 percent of the respondents knew about word's references tool while access was found among 45.8 percent of the respondents. However, 41.6 percent of the respondents knew about MS Access to design reports either printed or into PDF but only 29.1 percent of the respondents could access this feature of MS access. One third of the respondents (33.3%) knew about MS outlook use for tracking the task while only 24.2 percent of the respondents could access this feature. Respondents were having least knowledge about extension of MS outlook (27.5%) while 20.8 percent of the respondents could access this.

Table 1: Distribution of respondents on the basis of knowledge and access to Microsoft (MS) Office
(n= 120)

Sr. no.	Particulars	Knowledge		Access	
		Frequency	Percentage	Frequency	Percentage
1.	Extension of MS outlook	33	27.5	25	20.8
2.	Word's references tool	72	60.0	55	45.8
3.	MS outlook for tracking the task	40	33.3	29	24.2
4.	MS Excel is a repository	92	76.6	74	62.5
5.	MS Access to design reports either printed or into PDF	50	41.6	35	29.1
6.	Turn a presentation into video with audio	94	78.3	74	61.6
7.	Animate texts or objects in ppt	102	85.0	85	70.8
8.	Add an animated GIF to slide	96	80.0	68	56.6
9.	Functions (Formula) to analyse data in MS Excel	94	78.3	90	75
10.	Storage of data in word files and excel spread sheets	120	100.0	103	85.8

Overall Knowledge and Access to Microsoft (MS) Office
(n= 120)

The critical evaluation of results depicted that majority of the research faculties (65%) had medium level of knowledge of MS office which was followed by high knowledge (30.8%) and low knowledge (4.1%). Study got strength from past research study of Samansiri and Wanigasundera (2014) who revealed that all the respondents had availability and access to the most common computer software packages such as MS Word, MS Excel and MS Power Point and the usage of packages was also perceived high among respondents and majority of the respondents were having medium to high knowledge while access regarding online ICT applications was medium to low while around half of the respondents (50.8%) had access to MS office in the medium category which was followed by high access (29.1%) and low access (20%).

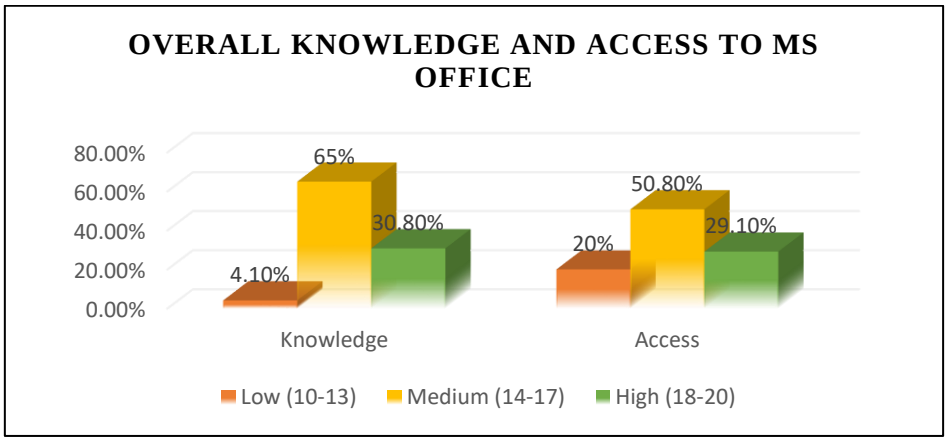

Fig 1: Overall Knowledge and Access to Microsoft (MS) Office

2. Knowledge and access to online ICT applications

With regard to knowledge and access regarding online ICT applications by research faculty, data in the Table 2 revealed that cent percent of the respondents had knowledge of arranging meeting on Google meet and 93.3 percent of the respondents could access the feature of google meet. Majority of the respondents (91.1%) had knowledge regarding zoom time limit and 76.7 pecent of the respondents could access zoom account independently. 73.3 percent of the respondents know that only one person at a time can share screen on Zoom while nearly half of the respondents (49.2%) could access that feature of sharing screen on zoom.

Further, above half of the respondents (53.3%) had knowledge of Microsoft Team for remote collaboration and 45.8 percent of the respondents could access remote collaboration feature of MS Team. Nearly half of the respondents (45.8%) had knowledge about hosting a meeting on Zoom without an account and 37.5 percent of the respondents could access hosting meeting on Zoom. Thirty five percent of the respondents had knowledge that Google Duo on web can be used without phone and 28.3 percent of the respondents could access Google Duo on web without phone. Below one third of the respondents (31.6%) were having knowledge that MS Team can hold up to 5000 people and 25 percent of the respondents could access this feature. It was further unfolded that 27.5 percent of the respondents had knowledge that one can have the same Duo mobile on two or multiple devices and 23.3 percent of the respondents could access Duo mobile on multiple devices. Only 19.2 percent of the respondents had knowledge that one can message someone on Skype from Microsoft Teams and 12.5 percent of the respondents could access this feature of skype and Microsoft team.

Table 2: Distribution of respondents on the basis of knowledge and access to online ICT applications
(n= 120)

Sr. no.	Particulars	Knowledge		Access	
		Frequency	Percentage	Frequency	Percentage
1.	Arrange a meeting and send a meeting invite with time on Google meet	120	100.0	112	93.3
2.	Google meet can have 1000 participants	36	30.0	25	20.8
3.	Google Duo on web can be used without phone number	42	35.0	34	28.3
4.	One can have the same Duo mobile on two or multiple devices	33	27.5	28	23.3
5.	Free Zoom account has a time limit of 40 minutes for each session	110	91.6	92	76.7
6.	Only one person at a time can share screen on Zoom	88	73.3	59	49.2
7.	One can host a meeting on Zoom without an account	55	45.8	45	37.5
8.	Microsoft Team for remote collaboration	64	53.3	55	45.8

9.	MS Team can hold up to 5000 people	38	31.6	30	25.0
10.	One can message someone on Skype for Business from Microsoft Teams	23	19.2	15	12.5

Overall knowledge and access regarding online ICT applications

Results furnished that above two-third of the research faculties (74.2%) had medium level of knowledge regarding online ICT applications followed by high level of knowledge (16.7%) and low level of knowledge (9.2%). Table further depicted that 60.8 percent of the respondents had medium access regarding online ICT applications followed by low access (28.3%) and high access (10.8%) represented that these respondents could access different online ICT applications independently.

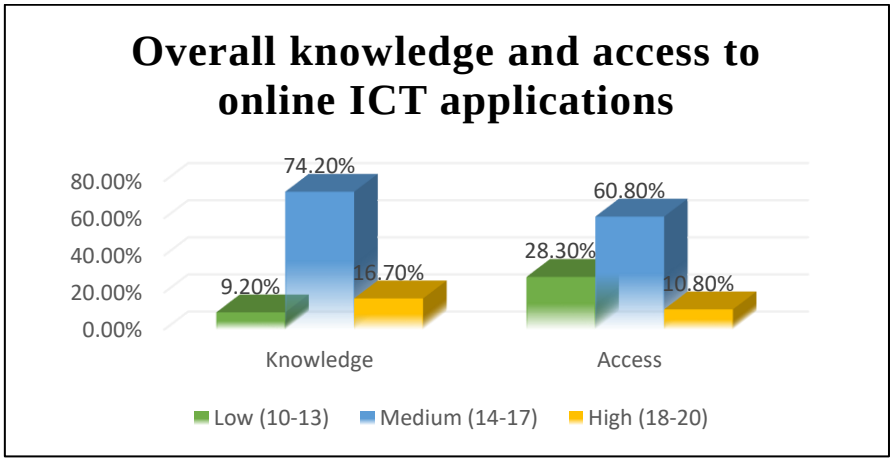

Fig 2: Overall Knowledge and Access regarding online ICT applications

3. Knowledge and access to internet applications

It is clearly depicted in the Table 3 that cent percent respondents had knowledge and access to internet applications for formulation of research problem/ searching the review of literature/ storing relevant published articles and BCC/CC in email. Further, it was indicated that 55.8 percent of the respondents had knowledge regarding Form Creation Software for data collection and 25 percent of the respondents could access this feature of internet. Nearly half of the respondents (45.8%) had knowledge about video editing and 23.3 percent of the respondents could access. Knowledge about how to broadcast video and personal photos was possessed by 45 percent of the respondents and 16.7 percent of the respondents could access this feature. Also, above one third of the respondents (38.3%) knew about installing and upgrading various computer programs with access to 27.5 percent of the respondents which was followed by the knowledge about Editing picture/digital sign (36.6%) with access to only 22.5 percent of the respondents.

Furthermore, more than one third of the respondents (35.8%) knew about telegram for large file sharing with access to only 19.2 percent of the respondents which was followed by 32.5 percent of the respondents had knowledge about Sci hub with access to only 11.7 percent. Below one third of the respondents (29.1%) knew about internet groups to discuss with colleagues, farmers and extension agents with access to 12.5 percent of the respondents. Following the same pattern 28.3 percent of the respondents had knowledge about views blogger need to get paid with access to 12.5 percent of the respondents. Only 27.5 percent of the respondents had knowledge about one-time picture sharing feature in WhatsApp with access to 21.7 percent of the respondents. Knowledge about how to create animated video was possessed by 25.8 percent

of respondents with access to 23.3 percent. Furthermore, only 24.1 percent of the respondents knew about how to create blog with access to only 12.5 percent. The knowledge about Creating pamphlet/GIF was found among 20.8 percent respondents with 17.5 percent access.

Table 3: Distribution of respondents on the basis of knowledge and access to internet applications
(n= 120)

Sr. no.	Particulars	Knowledge		Access	
		Frequency	Percentage	Frequency	Percentage
1.	BCC/CC in email	120	100.0	120	100.0
2.	Broadcast video and personal photos on the Internet (Like YouTube)	54	45.0	20	16.7
3.	Telegram for large file sharing	43	35.8	23	19.2
4.	Form Creation Software for Data collection	67	55.8	30	25.0
5.	Internet groups to exchange and discuss with colleagues, farmers and extension agents	35	29.1	15	12.5
6.	One-time picture sharing in WhatsApp (for highly confidential data)	33	27.5	26	21.7
7.	Create blog for publishing topic	29	24.1	15	12.5
8.	Formulation of research problem/ searching the review of literature/ storing relevant published articles	120	100.0	120	100.0
9.	Views blogger need to get paid	34	28.3	15	12.5
10.	Sci hub – a free database tool for research papers	39	32.5	14	11.7
11.	Installing and upgrading various computer programs	46	38.3	33	27.5
12.	Creating pamphlet/GIF	25	20.8	21	17.5
13.	Video editing	55	45.8	28	23.3
14.	Edit picture/digital sign	44	36.6	27	22.5
15.	Create animated video	31	25.8	28	23.3

Overall Knowledge and Access to internet applications
(n= 120)

Results pointed that majority of the respondents (74.2%) had medium level of knowledge regarding internet applications which was followed by low knowledge (15%) and high knowledge (10.8%) while more than half of the respondents (52.5%) had access to MS office in the medium category which was followed by low access among 45.8 percent of the respondents. The findings are in agreement with the results of Asemi (2005) and partially support from the study of Salau and Saingbe (2008) and Mugwisi *et al.* (2015) who reported that faculties accessed internet and two-third personnel access the ICT services. Cent percent of the respondents had knowledge and access to internet for formulation of research problem/

searching the review of literature/ storing relevant published articles and BCC/CC in email and result got support from the study conducted by Bansode and Pujar (2008), Ajala *et al.* (2010), Bisht *et al.* (2010) and Thanuskodi and Ravi (2011) and Kumar *et al.* (2022) stated that academic personnel utilized internet services for research reasons, publishing articles/books, teaching, keeping up-to-date in subject area and were the primary users of e-mail and internet services. Onwubiko (2012); Muriithi (2013); Kaba and Ramaiah (2019) also support the findings and found that e-mail is the most ICT tools used by the respondents.

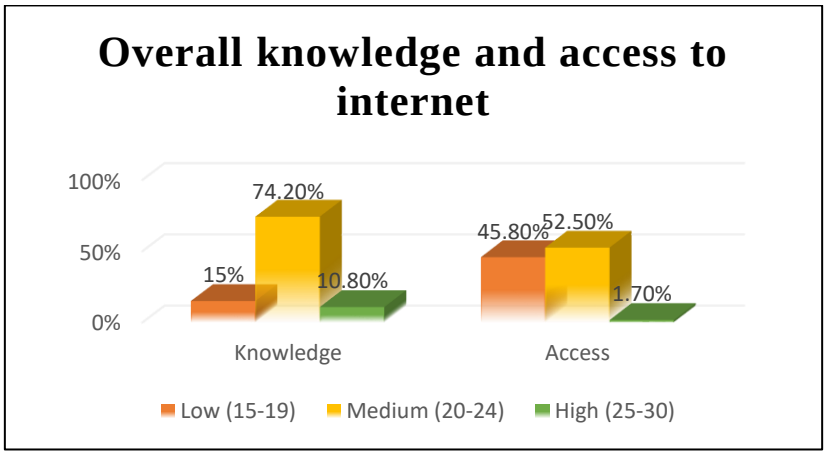

Fig 3: Overall Knowledge and Access to internet applications

4. Knowledge and Access to scientific portal/website/tools

Data in the Table 4 furnished that above one third of the respondents (34.2%) had knowledge about web 2.0 based tools such as virtual social networks like LinkedIn and Dupli checker a free version for texts of up to 1000 words while, 24.2 percent and 27.5 percent of the respondents could access these tools respectively. Nearly one third of the respondents (31.6%) had knowledge about Intranet tools with access to 25 percent of the respondents. Knowledge about Mendeley was possessed by 27.5 percent of respondents with access to 17.5 percent of the respondents. Only 24.2 percent of the respondents knew that researcher ID could be used to avoid author misidentification and 17.5 percent of the respondents could access researcher ID. Further, 20.8 percent of the respondents had knowledge of ORCID and 11.6 percent of the respondents could access that. Only 18.3 percent of the respondents had knowledge about academia.edu with access among 12.5 percent of the respondents. Knowledge of EndNote/Zotero tools possessed by 15.8 percent of the respondents while access to 11.7 percent of the respondents. Furthermore, only 11.7 percent of the respondents had knowledge about Trinka AI and 8.3 percent of the respondents could correct complex grammar errors and gives corrective and actionable feedback. Only 9.1 percent and 8.3 percent of the respondents had knowledge regarding Gantt Pro and Trello respectively and same percentage i.e. 4.2 percent of the respondents could access cost calculation per task and list and schedule activities with their scientific portals.

Table 4: Distribution of respondents on the basis of knowledge and access to scientific portal/website/tools
(n= 120)

Sr. no.	Particulars	Knowledge		Access	
		Frequency	Percentage	Frequency	Percentage
1.	EndNote/Zotero tools in research projects for referencing	19	15.8	14	11.7
2.	EndNote is a paid reference management application	15	12.5	11	9.2
3.	Intranet tools are useful for research processes in research department	38	31.6	30	25.0
4.	Know about web 2.0 based tools such as virtual social networks like LinkedIn etc.	41	34.2	29	24.2
5.	ORCID links all research together	25	20.8	14	11.6
6.	Mendeley can be used without Word	33	27.5	28	23.3
7.	Academia.edu for sharing academic research	22	18.3	15	12.5
8.	Researcher ID to avoid author misidentification	29	24.2	21	17.5
9.	Trello allows users to list and schedule activities	10	8.3	5	4.2
10.	GanttPRO for sub-division of major tasks into minor tasks and cost calculation per task	11	9.16	5	4.2
11.	Trinka AI corrects complex grammar errors and gives corrective and actionable feedback	14	11.7	10	8.3
12.	Dupli checker a free version for texts of up to 1000 words	41	34.2	33	27.5

Overall Knowledge and Access to scientific portal/website/tools
(n= 120)

More than half of the respondents (52.5%) had low level of knowledge regarding scientific portal/website/tools which was followed by medium knowledge (42.5%) and high knowledge (5%). Majority of the respondents (70.8%) could access scientific portal/website/tools falls under low category followed by medium access (28.3%). Only one respondent had high access regarding scientific portal/website/tools.

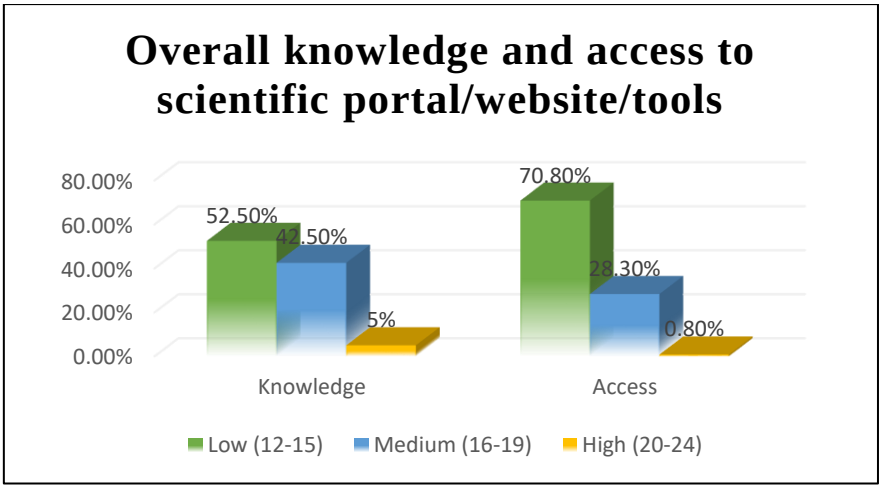

Fig 4: Overall Knowledge and Access to scientific portal/website/tools

Conclusion

The result of the study indicated that cent percent of the respondents possessed television and smart phones and overwhelming majority of the respondents possessed newspaper and computer/laptop at their homes. From the present study it can be concluded that overall knowledge and access to majority of the respondents regarding MS office was medium to high. Majority of the respondents were having medium to high knowledge and while access regarding online ICT applications was medium to low. Overall knowledge and access to internet was found medium to low among the respondents. Overall knowledge and access regarding scientific portal/website/tools was found low among the respondents.

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