Available online at: http://www.iajps.com   *Research Article*

ICT KNOWLEDGE, UTILIZATION AND KNOWLEDGE SHARING PRACTICE AMONG HEALTH PROFESSIONALS IN PUBLIC HEALTH FACILITIES IN ILU ABA BOR AND BUNO BEDLE ZONES, SOUTH WEST ETHIOPIA 2016/2017

[1]Alebachew B. , [2] Derje O.,[3] Dr. Raja Kumar Parabathina,[4] Rahel T
[1]Assistant Professor,Department of Health Informatics,Faculty of Public Health and Medical Science,Mettu University, Mettu, Ethiopia. E-mail alebe20009@yahoo.com
[2]Lecturer, Department of Health Informatics,Faculty of Public Health and Medical Science,Mettu University, Mettu, Ethiopia. E-mail dodbau3687@gmail.com
[3]Associate Professor,Department of Biomedical Science, Faculty of Public Health and Medical Science,Mettu University, Mettu, Ethiopia.
E-mail rajakumar.parabathina@gmail.com
[4]Lecturer,Department of Nursing, Faculty of Public Health and Medical Science, Mettu University, Mettu, Ethiopia

Abstract:
The computer as a tool has transformed information and data handling in all fields of endeavor. With the internet and the numerous networks within it, the world is fast turning into a global village. The health professions have been tremendously affected by the information and communications technology (ICT) revolution especially in the areas of information access, storage, retrieval, analysis and dissemination. Being a knowledge driven process, healthcare delivery provides opportunity to incorporate knowledge management practices to improve processes. The main objective was to assess ICT Knowledge, utilization and knowledge sharing practice among health care workers in Ilu aba bor and Buno Bedele zones, southwest Ethiopia, 2016/17 using institution based cross-sectional study. A total of 615 respondents were participated in the study and included in the analysis. Based on the demographics and other personal background information obtained, from the total respondents 400 (65%) were males and 215(35%) females. The result showed that most of the respondents 457 (74.3%) reported that they were know word processing. More than half 389(63.3%) of the respondents that they can a data base management and 464 (75.3%), 355 (57.7%), 453 (73.7) and 303 (49.3) know about Internet search, electronic mailing, file management and setting up computer system respectively. In knowledge sharing practice the study show that out of the total participants, 410 (66.7%) participants were used to share health information using e-mail and 125(20.3%) of the study participants didn`t use to shear health information with e-mail. Four hundred fifty eight (74.5%) of the participants have interest to participate in a workshop on how to use e-mail and 211(34.3%) of the participants never share education results with colleagues. Healthcare providers at the zones possess good knowledge, are considerably skilled with good disposition towards computer and use of the Internet especially for the enhancement of their professional practice and improvement of patient care quality. Major factors that contributed to the way healthcare professionals in this study knowledge of data base management and the use of Internet were profession and sex.
Keywords:-*ICT Knowledge, utilization, knowledge sharing practice.*

Corresponding Author:
Dr. Raja Kumar Parabathina,
Associate Professor in Biochemistry,
Department of Biomedical Science, Faculty of Public Health and Medical Science,
Mettu University, Mettu, Ethiopia.
E-mail rajakumar.parabathina@gmail.com

QR code

INTRODUCTION:

The computer as a tool has transformed information and data handling in all fields of endeavor. With the internet and the numerous networks with in it, the world is fast turning into a global village. The health professions have been tremendously affected by the information and communications technology (ICT) revolution especially in the areas of information access, storage, retrieval, analysis and dissemination[1].

Computers have been used to manage patients at a distance (telemedicine), to manage hospitals and their patients' records and to search and retrieve pertinent information for research and assist in clinical decision making. Clinical practice has been tremendously improved by the technological interventions and a new and rapidly growing field of applications called health informatics has emerged[2,3]. However, serious implementations of the above occur mainly in the developed countries and only in few pockets in the developing world, where health informatics is in high level use[4].

In most of the developing world, separated by the digital divide due to many reasons including high cost of hardware, software and connectivity, computer use and literacy though rising is still very low. More so, little is known about the level of computer use in health facilities within these communities[5].

As Knowledge is defined as human expertise, which is found in peoples mind and gained through experience, interaction and the like. Thus knowledge sharing enables shortening the learning cycle for new employees, retains experiences from serving staff, helps staff members to reflect on their experience and facilitates knowledge retrieval and use.[6] Computer utilization and skill of individual still depend on exposure to expertise and per-service education.

Statement of the problem

Appropriate health information resources are needed to support informed health professionals. Various scholars agree that ICTs are vital for accessing, retrieving and circulating recent and relevant information among health professionals. Hospitals and health centers become more relevant and useful to patients and health professionals with the adoption of ICTs. Access to healthcare information has international development issue especially professionals and the need to implement health technology (HIT) has become a paramount healthcare system [7]. Medical record systems, telemedicine, video conferencing, audio-video teaching materials,

internet access and e-learning are some of the ICT applications now being used in healthcare. Increasing numbers of healthcare professionals use hand held computers that offer instant access to vast amounts of information via the internet and healthcare applications[5].

In the last decades there has been a rapid and accelerating rate of innovation in handheld computers, from personal digital assistants (PDAs) towards more powerful, versatile and internet connected devices. As the rate of adoption of handheld computers has increased, individual patterns of usage have moved from that of communication and personal diary management towards information seeking and decision support[8].

The number of healthcare professionals is increased from time to time in Ethiopia. However there is also high turnover because of different factors. Therefore, knowledge-sharing practices in formal way can solve missing of experienced and skilled professional but the level of knowledge sharing practice is unknown[9]. Even though ICTs are important for efficient healthcare systems, knowledge sharing rates are still very low in resource-limited countries. Healthcare facilities in developing countries often experience poor data management, weak evidence-based decision-making practices, high medical errors and poor planning due to less use and sharing the ICTs knowledge [10]. Responding to the clause 'the world is turning into a global village', one needs to know where exactly we are and what needs be done to make us get along with the other parts of the world in achieving this goal. The success of any health informatics program will depend on the skill level and the perception of those who will run it. Another way healthcare professionals knowledge sharing practice on team work still depend on organizational culture, individual precession and computer technology skill [10]. However, ICT knowledge, Utilization and Perception among Healthcare facilities protocol suite to shares its history[11].

As much health service delivery is a team work in nature, knowledge sharing practice of the professionals is crucial in the global village and dynamic world in which the exposure to new technology make difference in individual performance[12].The objective of this study was to assess ICT Knowledge, utilization and knowledge sharing practice among health care workers in Ilubabor and Buna Beddele zone, south West Ethiopia, which was important and timely in our country and region to set the way forward in the health sector transformation that help officials to plan

and increase the knowledge driven health sector in the practice of evidence based decision.

METHODS AND MATERIALS:
Study Design and period
An institution based cross-sectional study was conducted from May, 2017to June 2017.
Source Population
The source populations were all healthcare professionals who are working in Ilu Aba Bor and Buno Bedele zones public health facilities.
Study population
The study populations were health professionals in the selected health facilities.
Inclusion criteria and Exclusion criteria
All health professional are included based on the availability at the study period.
Sampling procedures and sampling technique
Sampling technique
Stratified sampling technique was employed to select the health facility. Type A and B level health centers,

District hospital and referral hospital. Then all the health professionals were interviewed.
Sample size Determination
The sample size of the study was determined for each objective and the largest was taken.For the computer knowledge (33.7%) from study conducted in Addis Ababa[9]. For the utilization 14.1%[9]. For the Knowledge sharing practice 49.18% study from North Ethiopia[6] was considered to calculate sample size.The sample size was determined using a single population formula $n = Z^2\alpha/2\ p\ (1-p)/d^2$

- ✓   5% margin of error, and
- ✓   95 % confidence of certainty.
- ✓   10% adjustment for non-response rate and
- ✓   2 as a design effect, the calculated sample size was**844**

The final sample size was calculated by using population correction formula because the total population was less than 10000:

$$nf = \frac{ni}{1 + \frac{ni}{N}} = 723$$
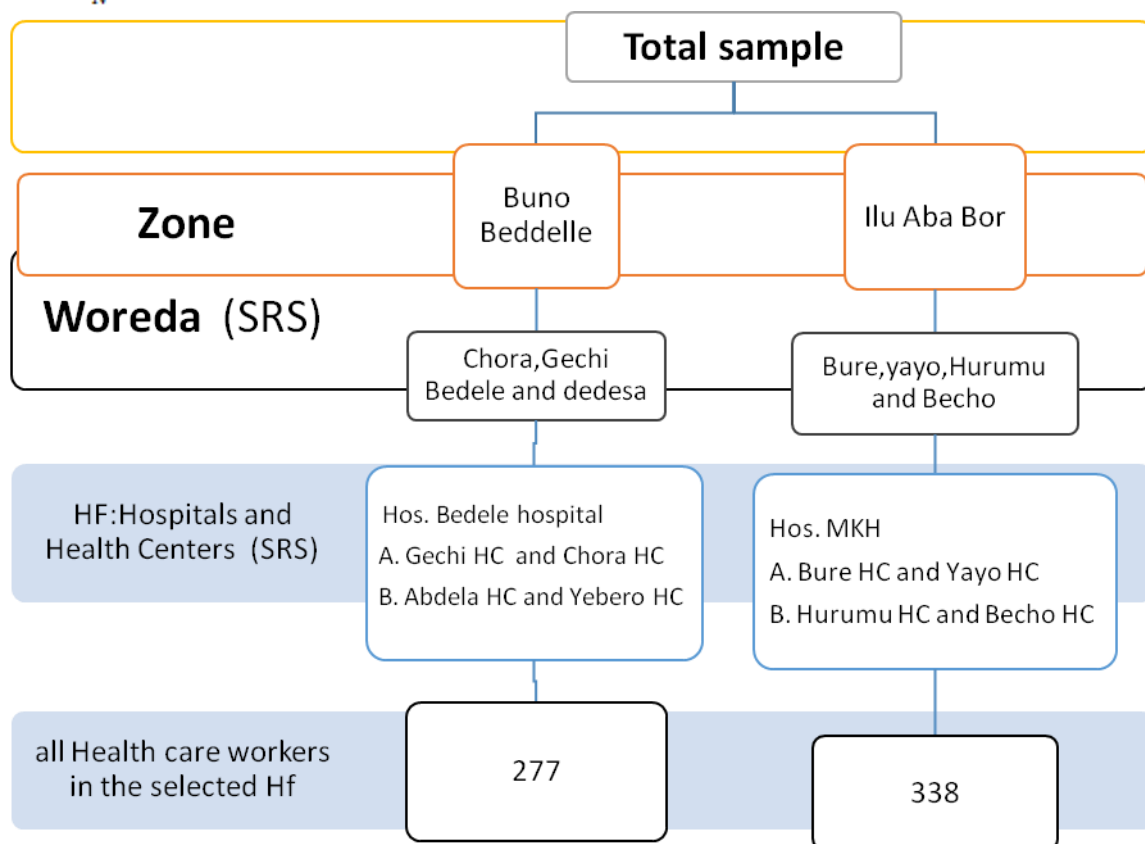
Data Collection Tools and Procedures
Data was collected using a pretested questionnaire face to face interview. The questionnaire was developed by referring to different related studies from the literature [1], [10], [14], [18]. The tool was prepared in English. The tool was validated through pretesting at the other health facilities other than the study area, which is similar in infrastructure to   the study area. Ten data collectors and two supervisors were participated in the data collection process.

Data Processing and Analysis Techniques
After data collection completed, the results were entered into a computer using SPSS version 20 software for analysis. Descriptive statistics were done to describe the study population in relation to relevant variables. Binary logistic regression analysis is conducted to discover the effect of each study variable on the outcome variable. Variables having a p value <0.05 on the bivariate analysis are entered into a multivariate logistic regression analysis to

check for confounding effects on the association from bivariate analysis. The strength of association was described at 95% CI p-value less than 0.05 was considered for the association.

RESULT:

Socio Demographic Variables of Respondent
A total of 615 respondents were participated in the study and included in the analysis. Based on the demographics and other personal background information obtained, from the total respondents 400 (65%) were males and 215(35%) females. The highest number of respondents was in the age group of 21-30 years 497(80.8%) and the smallest number of respondents was in the age group 41-50 years 9(1.5 %.). Three hundred sixteen (51.4%) were single and 293(47.6%) were married. Regarding to educational level majority of the respondents 331(53.8%) were diploma and 234 (38%) were first degree holders.

Table 1:- **Socio-demographic characteristics of respondents to assess ICT Knowledge, utilization and knowledge sharing practice among health care workers in Ilu aba bor and Buno Bedele zones, south West Ethiopia, 2016/17**

Variables		Frequency	Percent
Sex of the respondent	Male	400	65.0
	Female	215	35.0
	Total	615	100.0
Age category <20		57	9.3
21-30		497	80.8
31-40		52	8.5
41-50		9	1.5
Total		615	100.0
Marital status	Single	316	51.4
	Married	293	47.6
	Divorced	3	0.5
	Widowed	3	0.5
	Total	**615**	**100.0**
Religious	Muslim	105	17.1
	Ortodox	227	36.9
	Protestant	264	42.9
	Waqefeta	9	1.5
	Others	10	1.6
	Total	**615**	**100.0**
	first degree	234	38.0
	medical doctor	46	7.5
	specialist	4	0.7
	Total	**615**	**100.0**
Profession	medical doctor	33	5.4
	lab.tech	71	11.5

	Nurse	254	41.3
	midwifery	93	15.1
	pharmacy	54	8.8
	others	110	17.9
	Total	615	100.0
Monthly salary	1000-1499	22	3.6
	1599-1999	13	2.1
	2000-2499	22	3.6
	2500-3000	64	10.4
	>3000	494	80.3
	Total	615	100.0

Table 2:- ICT Knowledge and utilization among health care workers in Ilubabor and Buna Beddele zone, south West Ethiopia, 2016/17

Variables		Frequency	Percent
ICT knowledge and usage			
Word process	yes	457	74
	no	158	26
	Total	615	100.0
Data base management	yes	389	63.3
	no	226	36.8
	Total	615	100.0
Internet search	yes	464	75.4
	No	148	24.1
	don`t know	3	0.5
	Total	615	100.0
electronic mailing	yes	355	57.7
	No	238	38.7
	don`t know	22	3.6
	Total	615	100.0
file management	yes	453	73.7
	No	149	24.2
	don`t know	13	2.1
	Total	615	100.0
setting up computer system	yes	303	49.3
	no	278	45.2
	don`t know	34	5.5
	Total	615	100.0
Computer Use Duration of computer use	Less than 6 months	103	16.7
	6 to 12 months	99	16.1
	1 to 3 years	122	19.8
	4 to 6 years 7	79	12.8
	or more years I	91	14.8
	have never used a computer	121	19.7
	Total	615	100.0

Frequency of computer use	Everyday	172	28.0
	More than once a week	123	20.0
	Once a week	105	17.1
	Less than once a week	46	7.5
	Don't know	12	2.0
	I have never used computer	157	25.5
	Total	615	100.0
Barriers keep to use computer	Cost	121	19.7
	No access to computer	220	35.8
	Lack of skills or training	179	29.1
	Fear of technology	10	1.6
	No need	16	2.6
	Not enough time	69	11.4
	Total	615	100.0
Interest to participate in a workshop to learn computer use	Yes	481	78.2
	No	123	20.0
	Don't know	11	1.8
	Total	615	100.0
Type of information seeking on the internet (n= 573)	Health information on emerging diseases	420	73.3
	Drugs and medication	62	10.8
	Professional updates	46	8.0
	Lifestyle	33	5.8
	Updates on football and other athletics	3	0.5
	Updates on continuing professional devtedu	3	0.5
	Updates on general health info for patients' care	3	0.5
	Others	3	0.5
	Total	573	100.0
Type of engines/online database have you ever used to obtain(n=562)	HINARI	56	10.0
	Medline/PubMed	25	4.4
	AJOL	18	3.2
	Google Scholar	432	76.9
	Others	31	5.5
	Total	562	100.0
Social media used (568)	Twitter	59	10.4
	LinkedIn	18	3.2
	Yahoo Group	38	6.7
	Facebook	441	77.6
	others	12	2.1
	Total	568	100.0
Frequency of using e-mail	every day	135	22.4
	more than once a week	97	16.1
	once a week	106	17.5
	less than once a week	64	10.6
	don`t know	64	10.6
	never used the e-mail	138	22.8
	Total	604	100.0

The result showed that most of the respondents 457 (74.3%) reported that they were know word processing. More than half 389(63.3%) of the respondents that they can a data base management and 464(75.3%), 355(57.7%), 453 (73.7) and 303 (49.3) know about Internet search, electronic mailing, file management and setting up computer system respectively. The result of this study showed that 157(25.5%) respondents were never used computer in their life time and significant value220 (35.8) had no access to computer. Also the result show that 481(78.2%) of respondents were have Interest to participate in a workshop about computer training and 138 (22.8%) never used the e-mail in their work experience.

Table 3:-ICT Knowledge sharing practice among health care workers in Ilubabor and Buna Beddele zone, south West Ethiopia, 2016/17

Variables		Frequency	Percent
use of sharing health information using e-mail	Yes	410	66.7
	no	125	20.3
	don`t know	80	13.0
	Total	615	100.0
interest to participating in workshop how to use e-mail	Yes	458	74.5
	no	103	16.7
	don`t know	54	8.8
	Total	615	100.0
frequency to share education results with colleagues	Never	211	34.3
	rarely	135	22.0
	sometimes	200	32.5
	often	30	4.9
	always	39	6.3
	Total	615	100.0
Frequency of share know-how with the health proff.	Never	173	28.1
	rarely	161	26.2
	sometimes	205	33.3
	often	36	5.9
	always	40	6.5
	Total	615	100.0
frequency of sharing knowledge obtained from workshop	Never	168	27.3
	rarely	129	21.0
	sometimes	242	39.3
	often	30	4.9
	always	46	7.5
	Total	615	100.0
frequency of sharing knowledge gained from guideline	Never	152	24.7
	rarely	107	17.4
	sometimes	275	44.7
	often	33	5.4
	always	48	7.8
	Total	615	100.0
frequency of using internet to share knowledge with colleagues	Never	152	24.7
	rarely	144	23.4
	sometimes	241	39.2
	often	33	5.4
	always	45	7.3
	Total	615	100.0
frequency of using phone to share knowledge with colleagues	Never	147	23.9
	rarely	105	17.1
	sometimes	225	36.6
	often	54	8.8
	always	84	13.7
	Total	615	100.0

Table 3 show that out of the total participants 410 (66.7%) were used to share health information using e-mail and 125(20.3%) of the study participants didn`t use to shear health information with e-mail. Four hundred fifty eight (74.5%) of the participants have interest to participate in a workshop on how to use e-mail and 211(34.3%) of the participants never share education results with colleagues. One hundred seventy three (34.3%) of the participants were never have a willing to share their know-how health professionals. One hundred sixty eight (27.3%) of the study participants were never share knowledge obtained from workshop. One hundred fifty two (24.7%) of the study participants were never use internet to share knowledge with colleagues and 147(23.9%) of the study participants were never use their phone to share knowledge with colleagues.Profession had statistical significance on knowledge (p=.002) in internet searchand sex had significance on knowledge (p=.008) about data base management.

DISCUSSION:
This study has tried to assess the ICT knowledge, utilization and knowledge sharing practiceand factors affecting the knowledge sharing practices of health care professionals in the health facilities of I/A/B and BunoBedle zones.

Improving the health of individuals and communities, and strengthening health systems, disease detection and prevention are crucial to development and poverty reduction. This proposition requires evidence-base medicine (EBM) which demands appropriate and timely acquisition of the best available evidence often offered by ICT in order to answer clinical questions [19].Widespread adoption of ICTis a key strategy to meet the challenges facing health systems internationally of increasing demands, rising costs, limited resources and workforce shortages. It has been said that if ICTs are actively deployed, healthcare delivery becomes improved and the public health is better for it[20].In line with this, the study found that the majority of the participants had ICT knowledge on word process 74.3% and 63.3% have knowledge on data base management 19.8% used computer for one up to three years.The study is lower than other studies that reported good utilization of computer and the Internet [6,9, 22]. It however established improvement on studies with moderate use and others with low utilization of computer and the Internet [12]. The possible reason might be less accessibility of computer. Participants in this study are considerably knowledgeable and skilled especially in the use of electronic mail 57.7% and the Internet 75.4% mostly through self-efforts. These findings correlate with findings in Nigerian where notable number of participants reported that they first learnt ICT through self-efforts[24].The report on good ICT skill coincides with a study conducted in Nigeria where the majority knew how to use basic ICT applications such as Microsoft Word [3]. Major factors that contributed to the way healthcare professionals in this study knowledge of data base management and the use of Internet were profession and sex.Profession had statistical significance on knowledge (p=.002) in internet searchand sex had significance on knowledge

(p=.008) about data base management. This is similar with study conducted in Addis Ababa (9).

Access to healthcare information has become a key international development issue and improved proficiency in the use of computer and the Internet had been recommended as one way to improve access to invaluable health information among healthcare professionals [21, 36]. It is quite interesting that this study reveals general search for further training in theuse of computer 78.2% and the Internet 74.5%. The findings on further training in computer and the Internet correspond with other studies such as where participants wanted more training in electronic data analysis with much demands on provision for computer training and with training needs in the identification, use, and application of evidence in practice [9].

CONCLUSIONS AND RECOMMENDATIONS
Healthcare providers at the zones possess good knowledge, are considerably skilled with good disposition towards computer and use of the Internet especially for the enhancement of their professional practice and improvement of patient care quality. However, they presented poor knowledge in database management. Generally, increasing accessibility of computers and delivering trainings on computers for health workers increases knowledge and utilization of computers or increases the rate of diffusion of the technology for the health sector.They massively indicated interests for further training in the use of computer and the Internet so as to boost their sources of information for better practice and improved public health. Any effort at enriching their sources of information and enhancing their usability of these technologies would be worthwhile. Generally it is very important that the hospitals and other healthcare facilities organize specific and intensive ICT training for their employees and make necessary infrastructures available for the implementations and there is a need for advocacy on the need to embrace health IT among all healthcare professionals at the zones healthcare system as a whole.

REFERENCES:

1. M. Asemahagn, "Health professionals' Challenge in using ICTs to manage their Patients: the case of Hospitals in Addis Ababa, Ethiopia," *Online J. Nurs. Inform. OJNI*, vol. 20, no. 2, Jul. 2016.

2. J. Smith, R. Mallard-Smith, and D. Beattie, "Use of information technology in general practice.," *J R Soc Med*, vol. 98, no. 8, pp. 395–397, 2003.

3. E. A. Ime, O. A. Oluwakayode, F. Oladimeji, and M. Olusesan, "Computer use among doctors in Africa: Survey of trainees in a Nigerian teaching hospital," *J. Health Inform. Dev. Ctries.*, vol. 2, no. 1, pp. 10–14, 2008.

4. T. Kidane, G. Ejigu, and T. Girma, "Assessment of health management information system implementation in Ayder referral hospital, Mekelle, Ethiopia," *Int. J. Intell. Inf. Syst.*, vol. 3, no. 4, pp. 34–39, 2014.

5. A. S. M. Mosa, I. Yoo, and L. Sheets, "A Systematic Review of Healthcare Applications for Smartphones," *BMC Med. Inform. Decis. Mak.*, vol. 12, no. 67, 2012.

6. G. Teklit, M. Gebremeskel, T. Kidane, and T. Wondwossen, "Knowledge sharing practice and its associated factors of healthcare professionals of public hospitals, Mekelle, Northern Ethiopia," *Am. J. Health Res.*, vol. 2, no. 5, pp. 241–246, 2014.

7. "HSTP/Health Sector Transformation Plan." The Federal Democratic Republic of Ethiopia Ministry of Health, Oct-2015.

8. S. Mickan, H. Atherton, N. W. Roberts, C. Heneghan, and J. K. Tilson, "Use of handheld computers in clinical practice: a systematic review," *BMC Med. Inform. Decis. Mak.*, vol. 14, no. 56, 2014.

9. E. Mohammed, A. Gashaw, M. Solomon, and G. Eshetu, "Knowledge and utilization of computer among health workers in Addis Ababa hospitals, Ethiopia: computer literacy in the health sector," *BMC Res. Notes*, vol. 6, no. 106, 2013.

10. A. Ibrahim Taiwo, S. AdejokeAbiola, A. Moses, A. Tony Chucks, Z. Ibrahim Babaminin, and W. Muhammad Hassan, "ICT knowledge, utilization and erception among healthcare providers at National Hospital Abuja, Nigeria," *Am. J. Health Res.*, vol. 3, no. 1–1, pp. 47–53, 2015.

11. MoH Ethiopia, "Information Revolution Roadmap." Ethiopian Federal Ministry of Health, Apr-2016.

12. W. Timothy, M. P. Philip, M. W paul, R. Julio, J. Emily, and C. Ruth, "Knowledge sharing among healthcare infection preventionists: the impact of public health professionals in a rural state," *BMC Res. Notes*, vol. 5, no. 387, 2012.

13. P. Bordoloi and N. Islam, "Knowledge Management Practices and Healthcare Delivery: A Contingency Framework," *Electron. J. Knowl. Manag.*, vol. 10, no. 2, pp. 110–120, 2012.

14. J. DellabadaBatawalageAyanthiSaranga and R. Udaya Isaac, "Computer literacy among health care workers in District base hospitals in Kalutara District: A cross sectional descriptive study," *J. Thai Med. Inform. Assoc.*, vol. 2, pp. 97–104, 2015.

15. I. Ben Hamouda, I. Boughzala, and O. Chourabi, "Understanding Knowledge Sharing in Health Care System," presented at the Mediterranean Conference on Information Systems, 2015.

16. A. C. Elizabeth, M. C. Steven, and K. L. Suzana, "Improving knowledge sharing in healthcare through social network analysis," *Int J Collab. Enterp.*, vol. 4, no. 1/2, 2014.

17. N. Tabrizi and S. Morga, "Models for Describing Knowledge Sharing Practices in the Healthcare Industry: Example of Experience Knowledge Sharing," *Int. J. Manag. Appl. Res.*, vol. 1, no. 2, pp. 48–67, 2014.

18. T. A. Ibrahim, A. A. Muniru, M. O. Benson, B. J. Ahmed, and M. N. Ameenah, "Computer and internet use among tertiary healthcare providers and trainees in a Nigerian public hospital," *Am. J. Health Res.*, vol. 3, no. Health Information Technology in Developing Nations: Challenges and Prospects Health Information Technology. pp. 1–10, 2015.

19. G. Eysenbach. Consumer health informatics.BMJ.2000; 320(7251):1713- 1716.

20. M. Trivedi, A. Joshi. Computer and Internet use by healthcare professionals in a rural medical college in India. Library Philosophy and Practice.2008; 1-4.

21. N. A. Ajayi. Information seeking by nurses in the ObafemiAwolowo University Teaching Hospital, Nigeria. Information Development. 2005; 21(2):121-127

22. N. L. Bennett, L. L. Casesbeer, R. E. Kristofco, S.M. Strasser. Physicians' Internet information-seeking behaviours. The Journal of Continuing Education in the Health Professions.2004; 24: 31-38.

23. N. Bennett, L. L. Cases beer, R. Kristofio, B. C. Collins. Family physicians' information seeking behaviours: a survey comparison with other specialties. Medical Informatics and Decision Making.2005;

24. I. T. Adeleke, A. O. Adekanye, S. A. Adefemi, et al. Knowledge, attitudes and practice of confidentiality of patients' health records among healthcare professionals at Federal Medical Centre, Bida. Nigerian Journal of Medicine. 2011; 20(2): 228-235.