ADDIS ABABA UNIVERSITY SCHOOL OF GRADUATE STUDIES SCHOOL OF PUBLIC HEALTH AND SCHOOL OF INFORMATION SCIENCE

HEALTH INFORMATION SEEKING BEHAVIOR AMONG HEALTH PROFESSIONALS WORKING AT ADDIS ABABA HEALTH BUREAUE HOSPITALS

BY

BELACHEW AYMIRO

A THESIS SUBMITTED TO SCHOOL OF GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS OF SCIENCE IN HEALTH INFORMATICS.

ADDIS ABABA, ETHIOPIA

JUNE , 2013

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LIST OF ABBREVATIONS AND ACRONOMYS

BPRN	Practice Based Research Network
CINHAL	Cumulative Index to Nursing and Allied Health Literature
ECDC	European Center for Disease prevention and Control
EJHD	Ethiopian Journal of Health Development
EPI INFO	Soft ware for Expanding program on immunization information
IMR	Institute for Medical Research
ICTs	Information Communication Technologies
JMLA	Journal of the Medical Library Association
SPSS	Software package for social science
TV	Television
UK	United Kingdom
USA	United States of America
WWW	World Wide Website

Abstract

Background: Health information plays a significant role in the quality of decisions made by health professionals while delivering health services. Utilization of information among health professionals differs as a result of individual health information seeking behavior. Researches showed that individual, organizational and infrastructure factors affect the health information seeking behavior.

Objective: To assess health information seeking behavior of health professionals working in Addis Ababa health bureau owned hospitals.

Methods: - A cross-sectional survey using qualitative and quantitative methods was used to assess health information seeking behavior of health professionals working in six hospitals. Self administered questionnaire was used to collect data from 422 respondents and observational check list was used to collect qualitative data. The collected data was analyzed using EPI INFO version 3.5.1 software and using SPSS statistics version 16 after the data was exported from the EPI INFO software and interprets by using the following parameters: frequencies cross tabulation, binary logistic regression and Odds Ratio (OR). Significant association among study variables and interpretation of data were done by using 95% CI and at p-value<0.05.

Results: Only 339(82.7%) have a characteristics of seeking health information from different sources and places with various frequencies. Majority of the respondents 378(92.2%) have a need to have further on-job training to support their work. The most frequent used information source in almost all study area was medical text books 334(81.5%) but the most preferred HIRs by respondents are on job training 202(49.3%) and electronics and internet 188(45.9%). Economy, time, organizational infrastructure, low disease prevalence and personal initiation are the most common factors in seeking of health information.

Conclusion and recommendation: Majority of respondents has a behavior of seeking health information and most of them accessed printed resources but they prefer electronic materials and discuss with colleagues to solve their information limitation related to health. So all concerned body must give attention to these and must work in information sharing by using consultation and morning session methods.

1. INTRODUCTION

1.1 Background

Information plays a significant role in our daily professional and personal life and we are constantly challenging to take charge of the information that we need for work, entertain and everyday decisions and tasks. It may includes identifying own needs, searching the information by any methods, evaluate, select and use that information. Information communication technology and digital revolution present different opportunities for giving health information to the health care practitioners and public so that the coming decades, face to face patient-doctor; other health professionals with each other contacts will become less common and exchange between health professionals and providers will increasingly be mediated by electronic devices. (1). Information communication technology (ICT) has the potential to bring impact almost every aspect of the health sector. In public health, information management and communication process are very important and it depends on one's country ICTs infrastructure and information seeking behavior (2).

Information seeking is a conscious effort to acquire information in response to a need or a gap in knowledge. People seek information to add knowledge, to confirm or disconfirm their current state of beliefs and opinions and use that information for different purposes (3).

Information seeking behavior is the purposive seeking for information as a consequence of a need to satisfy some goal by interacts with manual information system such as newspaper or library or with computer based system. It also differs significantly according to educational status and background, culture, gender, accesses, income, needs, requirements, type of information, reasons and experience of searching. (4, 5, and 6). Different researches done in Ethiopia showed that health professionals seek health information for different purposes including for current updated issues. At the same time while seeking information health professionals faced various challenges such as poor printing and electronic resources and infrastructure (7, 8, 9).

1.2 Statement of the problem

Health care providing organizations and health professionals need up to date health related information to diagnose, treat and give quality health care based on knowledge and skill for rapidly changing disease behaviors(7).

Up to date information and use of appropriate technologies can increase the quality and the accessibility of information and this helps people to improve their own information need and at the same time gives a chance for health care organizations to help their clients to achieve health through health care systems and public health processes (4, 10).

Most research on the health information need and seeking of health professionals has largely focused on the information and research needs of medical doctors by neglecting the role of other health professionals. There must be a clear understanding that efficient availability, and accessibility of health related information does not only facilitate health professional's ability to make important decisions, provide effective and quality care for the clients but also important for quality health related research; therefore it is essential, that medical literature should be easily and rapidly accessible to health professionals so that they in turn should be able to use it for different purposes. (11).

The accessibility of recent and up to date printing journals is not that much available in library but the common means of health professionals seek health information for new diagnosis, treatment, patient care and management get through on job training by government and nongovernmental organizations(12).

Health care providing organizations and health professionals need up to date health related information and use of appropriate technologies to diagnose, treat , give quality health care services and health related researches based on knowledge and skill, but there is a problem of accessibility of different health related information sources and technologies in the hospitals.

1.3 Rationale of the study

Since information is an important issue in different areas specially in health care services , information seeking is mandatory for health professionals and others because lack of up to date health information lead to medical errors and patient dissatisfaction; to minimize these daily health information seeking is necessary. Due to this the study will help to understand the behavior of health information seeking, types of sources, the challenges and barriers of seeking information and finally gives recommendations in the study area. The study will also serve as a reference for others, it may fill research gaps and initiate ministry of education and ministry of health to give training about ICT for their students, it also initiates organizations to allocate budget for ICT infrastructure, different health related printed materials and give on job training for employee.

2. RESEARCH QUESTIONS

The study will try to answer the following questions:-

- What are the health information seeking behaviors among health professionals in the study area?
- What are the common health information sources which most health professionals used?
- What are the existing factors that affect the health information seeking behavior?

3. LITRATURE REVIEW

3.1. Information seeking behaviors of health professionals

Information can be accessed through variety of sources like electronics, printing materials, TV, radio, colleagues' etc and to become successful the information must be reliable and trustful because trust and reliability are crucial element in public health practices and other health care delivery systems (3, 4).

Information seekers can acquire health information from an unexpected variety of resources some studies indicates that sources are used complementarily based on some purposes and unknowingly during health information sources (5).

Health information seeking behavior varies depending on type of information sought, reason for and experience of searching skill, sources, amount of time and area of specialization(7).

In medical field, the information needs more accuracy, the information seeking behavior of various pupil have been explored from many viewpoints at an international level. Subject interest, for example, has been one of the several factors explored in studied of users, purpose of need, urgency of need and use of information source (9).

Online health information consumers tend to be more educated, earn more and have high speed internet access at home and at work area (9). Some research reported that electronic source of information are increasing and data base searching is a source of health professionals for information even if there is several constraints. By this way, consumers become more knowledgeable and are able to participate actively in diagnosis, treatment and patient care process (3).

Public health communication initiatives must use the most effective strategies for the promotion, protection and maintenance of health by using available evidence. The health care providing organizations and health professionals need up to date health related information to diagnose, treat, and to give quality patient care based on knowledge and skill for rapidly changing disease behaviors (8).

Because up to date information and the use of appropriate technologies can increase the quality and the accessibility of information and this helps people to improve their own information need and at the same time gives a chance for health care organizations to help their clients to achieve health through health care systems and public health processes (4, 12). One study on an Africa Americans conducted and shows most of them (45.3%) seek information from health professionals, from website around (14.5%) and (9.8%) other sources (11).

Health professionals need different types of health related information's to achieve their clinical and patient care needs, to gain clinical and educational interests and also they give more attention to get information from easy to use and reliable sources (13). Due to different reasons, the preferences of resources are differ from person to person; printing materials, electronics, senior colleagues and journals are the common sources of information (14).

Health related literatures are very important to health professionals to perform their tasks most effectively and efficiently (11, 15).

According to the results of the recently conducted nationally representative survey in Turkey, 80% of internet users in USA go online search for health-related information, in Turkey 54 % (3).

From 27 respondents of nurses in UK about internet access to use 48% of the respondents had internet at home and work place,22% of them had access at work place and 26% had at home(16).

According to a research conducted in India on practitioners books are the main sources for 59.5% of respondents, medical websites and personal contacts are the second and the third choice sources 14.4%and 13.5% respectively (16).

For general information questions like how often sought information and what purpose uses this information the result indicates that to care for their patient, they sought information from colleagues ,online sources and print materials from these respondents 58% did this several times per week,18% daily ,22% rarely and 2% never do this(17).

There is a research that was done in Thailand; the research shows academic medical scientists need up to date information from internet, different unpublished papers, research proposals, colleagues ,policy guidelines, project reports and journal articles are the most preferred information source by biomedical scientists and technologists (15, 16).

Research conducted in Saudi Arabia to compare clinical information needs between rural and urban physician indicates that the needs is the same but in respect to use of electronic source and consulting specialists; the rural physicians are less in using electronic sources compared to urban physicians; however ,there is no difference between using of printing materials but about see the barriers; lack of time ,isolation ,inadequate library access, shortage of equipment, searching skill, cost and ICT infrastructure are common in rural physicians(17,18).

There is an assumption that doctors and other health professionals need information for clinical purpose but they need it not only this purpose but also for knowledge sharing, teaching-learning and communicating with others (16). Clinical care like diagnosis and treatment are the common and most of the physicians applied after getting the information (17).

According to a research published on JMLA greater than half (58%) of practitioners need information for support and care the patient, on the same paper, (40%) of the respondents have no interest to online searches but; (44%) of the respondents did occasionally (18).

Some researches indicates that doctors use the Internet for e-mail, to retrieve information, attending course and conference ,get professional and administrative information(19).

Many clinicians found in India used text books, drug indexes and less use of journals and internet to seek health information. Another research in India shows there is relationship between information resource and work place (20).

There is a research to study about the source of health information,(66%) of the respondents begins a search process use Google and yahoo as an engine; but from the respondents around (27%) use a specific health related website (21). Other study shows 96% of nursing students and 4% of clinical nurses use CINAHL, but both have no access of CINAHL at work place (21).

The same study also showed that approximately, 48% of practitioners had access to a small medical library, 46% to a hospital library, and 21% to a university medical library and about 14% had no immediate medical library access (21). From these around 55% accessed a library via the internet; 57% of respondents reported having access to 2 or more types medical libraries; and 29% had access to 1 type. About the frequency of they use library 33% used the library sometimes, 28% frequently, 21% rarely and 7% never used (22).

A research conducted in India on urban doctors about the sources of health information more than half of them (59.5%) the source is book ,(14.4%) of them general medical websites,(13.5%) colleagues ,around (5.6%) expert website,(4.2%) journal articles, (0.5%) professional news letter(23).

A research conducted in Brazil on medical residents about the factors that affect information seeking from 66 respondents it shows around 53% faces difficulties of choosing among the documents and 38% have a time problem (24). There is a research in Uganda and from 67.7% respondent rate it shows that the most often used source of information are discussion with colleagues (89%), doctors statements (85%) and books (77%) (25).

A research conducted in Saudi Arabia on attitudes of physicians toward drug information center shows that textbooks, periodicals, symposia and company representatives are the most frequently consulted sources of information about drugs (26).

According to a research conducted in Saudi Arabia on 177 primary care physicians printed sources are the common sources compared to electronic and human sources; from 177 respondents; 119(67.2%) use printed medical journals,99(55.9%) use medical books, around 99(55.9%) uses clinical manuals and 76(42.9%) uses other sources(27).

Among 140 nurses, 32 interns and 38 residents in Iran about sources of health information and barriers (78.4%) used human resources, (56.8%) used printed resources and 37.4% used electronic sources for clinical decisions. No need of additional data by interns and residents, time limitation, poor access to computer, lack of skill are some barriers reported (22). Due to time constraints, many health care professionals prefer to obtain information from resources that are convenient, easy to use, and reliable. Professional superiors, colleagues, and other health care providers, especially physicians, are favorite resources for nursing information (22).

Print materials are another group of preferred resources of information, including nursing textbooks and journals. Other reports, however, indicate an underutilization of the available nursing literature with a reduction in textbook use and minimal reliance on print journals (22).

A research conducted in Nigeria; on physicians about access and use of internet; (98%)of physicians use internet but the access is different; (76%)accessed from cyber cafes, (64%) of them used for e-mail service; (90%)of physicians used the information for patient care of (90%), (76.2%) have search MEDLINE /Pub Med database. The study also shows more than half (58.1%) have no confidence to download articles. Like other African countries the most common barriers in Nigeria are band width, access of internet, lack of skill, cost and information overload (25).

There is also another research conducted on physicians in Nigeria about health information sources preference among physicians ; 85.8% of them prefer text books,79.5% focus on journals publications ,72.4% prefer communicate with colleagues, (66.9%) internet search , around (58.9%) seminars/on job training and only 18% of respondents used source information from library sources. The research also shows needs, reasons of seeking and priority of health information on 160 doctors; all need information to update themselves, 74.6% for drug information ,(65.3%) for patient care, (54.6%) to read government regulations and laws related to health care. (28).

In Nigeria there is study conducted about access of computer among physicians from the respondents; (7%) of them illiterate computer in different reasons; around (33%) had no time and (33%) had no interest to learn; all the rest 97% of the physicians literate computer from this; (98%) of them used internet, from the (98%), (36%) had personal internet access. On the same study; (57.6%) of the respondents have their own personal computer and most of them (62.2%) use internet for e-mail, (14%) health related information, (5.2%) patient care purpose, (12.2%) for research and (1.7%) other purposes(27).

To assess the access and use of health information resources among health practitioners and planners in Uganda revealed various type of information sources such as discussions with colleagues (89%), comments from doctors(85%),text books(77%) and internet and libraries(29%)(29).

A research conducted in Addis Ababa health centers on health professionals working in HIV/AIDS and family health units about the health information resources in this study from the respondents;(66.2%) used protocol manual, (64.9%) used books, (52.7%) in service or on job training and (17.6%) use electronic resources on the same research about the preference; around (69.1%) prefer on job trainings and (60.7%) prefer printing materials (30).

According to a study conducted on physicians in Addis Ababa about use of internet; (88%) of physicians use internet for different purposes from those (88%); (42%) to check e-mails, (20%) for NEWS,(18%) for entertainment and (13%) to browse medical journals. The study also shows the access of internet; (42%) from internet cafes, (34%) at work areas, (23%) at home and around 1% at different areas. Lack of computer access, lack of knowledge to use internet, lack of time and poor internet connection are the major barriers to use internet. From the respondents ;(36%) use health information to treat patient, (33%) to diagnose a patient, (20%) for patient diagnosis decision and (11%) for research purpose (9).

A study conducted in Bahrdar ;(42.8%) respondents had access to internet and use a Google as a search engine. The study also shows about source and access of health information; around (39.3%) books, protocol manual and in service training, (24.8%) books only, (13.3%) protocol manuals and (4.4%) senior staffs. In the same study a choice of health professionals from formal and informal health information; (98.8%) prefer formal resource; from these (97.3%) of respondents use this information to support their daily activities (7).

3.2. Factors affecting health information seeking behavior of health professionals

Different literatures show; access, age, educational background ,economy ,personal motivation, cultural background, computer literacy, ICT policy, infrastructure , working environment, time and geography affect the health information seeking behaviors.

Accessibility of advanced ICT brings a great change in information seeking behaviors because the technology have storage, distribution ,presentation capability and accessed by e-mail, chat etc at any time and place (3,15).

Internet has almost become a common and attractive tool for health information-seeking purposes due to the immediate satisfaction related with finding quick answers to health related information's, easy and secure accessibility, low cost, available anytime and these makes online health information so popular and attractive for consumers**.** In spite of this situation, approximately half of the health care providers need online to learn about latest researches and obtaining information about a disease and specific patient problems (10).

Understanding of preventing barriers for getting information has a great value when talking about the seeking behavior of information (17).

In America the common and the first barrier is time (76%) next to this cost (33%), search skill (25%) and no specific information source (22%). The research conducted in Island indicates that (82%) of the health professionals have a problem of searching skill and need training in searching internet –based resources (18).

Internet has key role in continuing health education, give care for patient, however, there are a lot of barriers and challenges like time, seeking skill and information overload (22).

Researches show that health care organizations have a problem of ICT infrastructure and also health professionals have a problem of initiation, searching skill and shortage of time to search health information (25).

According to a research done in Iran on nurses about why not use electronic source for health information, the study indicates due to time constraints, poor accessibility of computer and lack of skill are common reasons (30, 37).

A study conducted in Saudi Arabia on rural and urban primary health care physicians about barriers that affect accessing of health information; lack of training how to use information, lack of library, lack of uniform data standard, lack of up-to-date medical books, lack of access to medical database and lack of inter-library loan services are reported as the common barriers (27).

The common and major barriers which hinder health information seeking behavior of health professionals are lack of time take (76%); and the others are cost (33%), information source format (22%) and seeking skill (25%) take their parts (22,32).

According to a study conducted in Nigeria doctors; (62%) had a problem of searching internet, (44%) faced internet connection problem, 26% had searching skill problem, (16%) had cost problem and (14%) had information overload (31).

Research done in 2011 at Addis Ababa health facilities about computer access on 313 respondents the study shows; the accessibility of computer in work area is (51.1%) but the majority (91.1%) of respondents have no internet access in their work area (21,34). Lacks of budget, lack of initiation, lack of computer are other barriers to seek health information in the study area health institution (8,33, 35).

3.3. Conceptual frame work

About the conceptual frame work of health information seeking behaviors and factors that affect seeking behavior different literature show the process is cyclic and it includes searching process, satisfaction with searching process, access and information needs, internal or external factors for different purposes like competition, update themselves and research (15, 27, 36).

Health professionals need different types of health related information to achieve their clinical and patient care needs, to gain clinical and educational interests and also they give more attention to get information from easy to use and reliable sources (13).

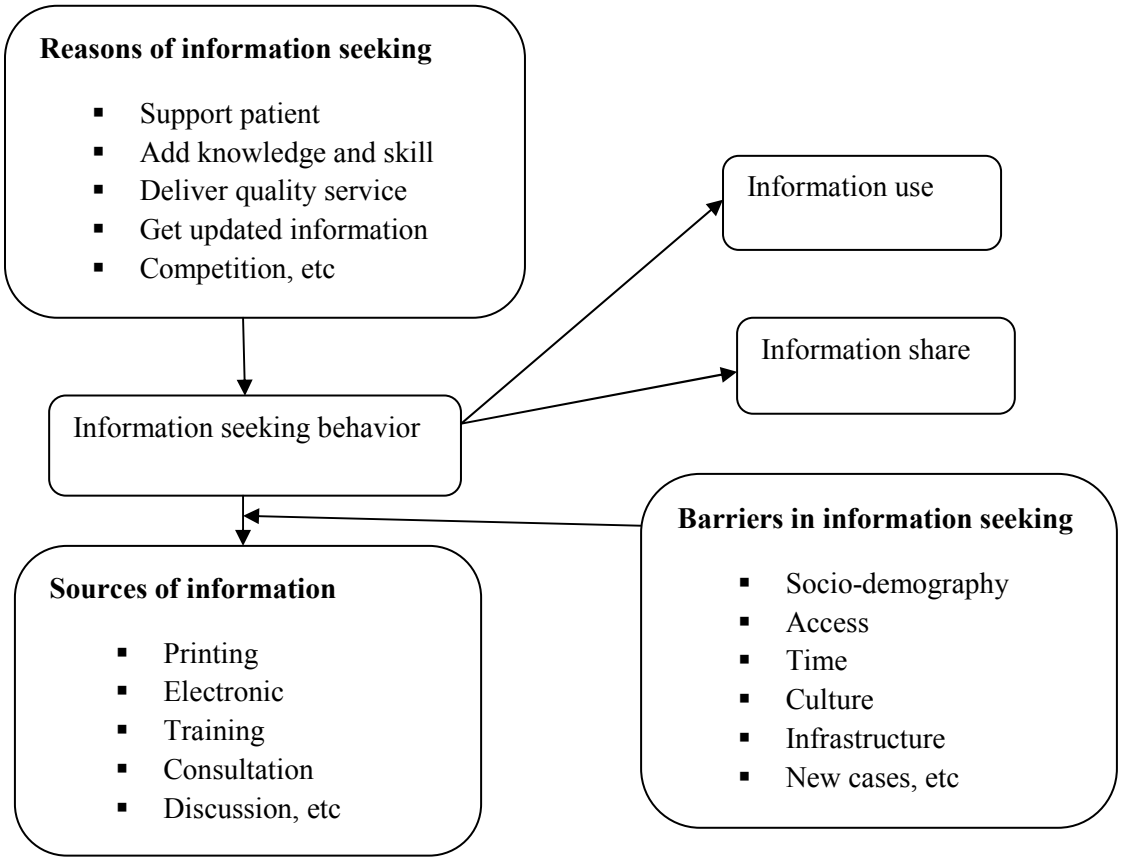

Figure1. Conceptual frame work showing the relationships among information seeking behavior and reasons for seek and barriers that affect the process (7).

4. OBJECTIVE OF THE STUDY

4.1 General Objective

- To assess health information seeking behavior of health professionals working at Addis Ababa health bureau owned hospitals

4.2 Specific objectives

- To assess the reasons that health professionals seek health information in the study area?
- To determine the factors that affecting the health information seeking behavior of health professionals.
- To identify the sources of health information commonly used by health professionals.

5. METHODOLOGY

5.1. Study area and period

The study was conducted in Addis Ababa, the capital city of Ethiopia with the total population of around 3 million. In Addis Ababa there are 10 public and 14 private hospitals. The study was conducted in six hospitals under Addis Ababa health bureau namely, Menelik II referral, Zewditu memorial, Ghandi , Yekatit 12 ,Ras Desta Damtew and Tirunesh Bejing hospital. The number of respondents in each hospital is; Menelik II referral (79), Zewditu memorial (76), Ghandi(53), Yekatit 12(71), Ras Desta Damtew (70) and Tirunesh Bejing hospital (61) respectively from March to June 2013. Except Menelik II referral and Ras Desta Damtew hospitals all others have obstetrics and gynecology health care services. Yekatit 12 and Zewditu memorial hospitals have pediatrics health services and Yekatit and zewditu hospitals have mental health care service. The hospitals have different types of professionals according to the services they give.

5.2 Study design

A cross-sectional survey used for quantitative and qualitative methods was conducted.

5.3 Source population

All health professionals who are working in Addis Ababa health bureau owned hospitals.

5.4 Study population

Health professionals who are working under Addis Ababa health bureau hospitals having professional qualification of minimum diploma during the study period.

5.4.1 Inclusion criteria

Professionals who were working under Addis Ababa health bureau owned hospitals during the period of data collection.

5.4.2 Exclusion criteria

Health professional having below diploma and who were absent from work during the study period.

5.5 Sample Size determination

Based on the two studies conducted related to this topic in 2009 in Addis Ababa and one Bahrdar in 2012(7, 8) . A study in Addis Ababa focus on only physicians who are working in health centers HIV/AIDS and family planning unit ; in Bahrdar infrastructure and diversity of specialization is different from Addis Ababa so it is difficult to take as a base to calculate sample size. So the proportionate sampling of health information seeking behavior among health professionals 50% because of lack of enough prior study on similar study population.

Sample size of the study was calculated by using an equation of single population proportionate formula:-

Z ά/2 (95% Confidence a significant level of p=0.05) =1.96

P (proportion of health professionals who seek health information is assumed to be 50% to get maximum sample size

d (margin of error or precision) = 5% (maximum tolerated error is $\pm$ 5%)

q (Proportion of having no seeking behavior) = 1-p, Maximum none respondent rate and recording error =10%

$$n = \frac{Z\,\acute{a}/2\ pq}{d^2} = \frac{(1.96)^2 \times 0.5x(1-0.5)}{(0.05)^2} = 384$$

‘‘**n**’’ was the sum of 384 and 10% of 384= 384+38.4=422

5.6. Sampling Methods

The researcher selects all participants random sampling from all hospitals.

5.7 Data collection procedures and tools

5.7.1Quantitative data

Structured and self administered English version questionnaire was used to collect data. Questionnaire encompasses the socio-demographic characteristics, information seeking behavior, organizational infrastructure, and health information resource access and pretest was conducted at one hospital different from the study hospitals. Six data collectors and three supervisors were given training for one and half day before starting the job to help the participants how to fill the questionnaires. The entire questionnaires, the data collectors and hospitals were coded and distributed to the participants through data collectors with orientations (**Annex III).**

5.7.2 Qualitative data

To fulfill the gap of quantitative data the researcher was used a qualitative observational checklist based on the objectives of the study. All required data were recorded according to the prepared checklist. Observational check list was used to collect the required data from study institutions. It contains health information resource access and health information seeking behaviors. The qualitative checklist encompasses different elements library service, HI resources in library, presence of morning session and case presentation, training schedule and assigning, internet and computer access and observing professionals while using any information resources and coded which were important to assess and fill the gap **(Annex IV).**

5.8 Study Variables

5.8.1 Dependent Variable

- Health Information seeking behavior of health professionals

5.8.2 Independent variable

- Socio-demographic characteristics(age, gender, religion marital status ,number of children, salary, professional background, qualification ,work experience,)
- accessibility of resources(computer, internet ,printing materials etc)
- time availability to use HI resources
- searching skill
- computer training /literacy
- culture (reading habit, information use habit, attitudes toward ICT)
- low disease prevalence and new cases

5.9 Operational definition

1. **Health information seeking behavior:-**is a conscious and purposive seeking for information as a consequence of a need or gap to satisfy some goal by interacting with manual or computer based system.
2. **Online health consumer: -** A person who searches online for information on health topics.
3. **Information needs:-**the user's demand for information that is relevant to their work.
4. **Information behavior**: - is the totality of human behavior in relation to sources and channels of information, including both active and passive information seeking, and information use.

5.10 Data quality assurance

Data collection method steps were followed carefully and questionnaires were checked on a daily basis for completeness by the principal investigator. Incorrectly filled or missed ones were sent back to respective data collector for correction. The investigator made supervision of the data collection during data collection period.

In order to cross check the collected data and to maintain the quality of data the principal investigator was also randomly re-checked five percent of the completed questionnaires daily.

5.11. Data processing and analysis

5.11.1 Quantitative data:

All collected data was first checked, coded, edited and then cleaned and then the edited data was entered manually by the principal investigator using EPI INFO version 3.5.1 software and clearing, editing, organizing and checking missing value and consistency of data was made. Analysis was done using SPSS statistics version 16 after the data was exported from the EPI INFO software and interpret by using the following parameters: frequencies cross tabulation, binary logistic regression and Odds Ratio (OR). Significant association among study variables and interpretation of data were done by using 95% confidence interval and at p-value<0.05.

5.11.2 Qualitative data:

The required data were recorded according to the checklist and content analysis or narrations were used to analyze qualitative data according to the objective of the study. The finding was represented by using words, tables.

5.12 Ethical Consideration

The proposal was submitted to the Institutional Ethical Review Committee of the school of information science and public health, Addis Ababa University. Then, ethical clearance was obtained from Addis Ababa University and submitted to Addis Ababa Health Bureau and letter of support obtained from Addis Ababa health bureau. Informed verbal consent was obtained from the health facilities in which the study is going to be carried out after clearly explained about the study.

The health professionals who are working in the hospitals who are going to participate in the study were asked for informed written consent annexed at the last page after all the necessary information like confidentiality of their responses, no any secret behind the study, no any payment due to participating in the study and they can stop any time after they start participating is presented to them for their willingness to participate in the study.

5.13 Disseminating research findings

The findings of this study will be submitted to Addis Ababa University, School of information science and public health for partial fulfillment of masters of Science in health informatics. It will also be sent to Addis Ababa Health Bureau and all the health facilities the research was conducted to show the gap.

6. Results

6.1. Quantitative results

Four hundred twenty two self administered questionnaires were distributed across health professionals in Addis Ababa six hospitals. From these questionnaires, 410 were completed and returned back and analyzed with a response rate of 97.1%. The rest 12(2.9%) were non responses due to different reasons like shortage of time, lack of interest.

6.1.1. Socio-demographic characteristics of the respondents

Four hundred twenty two health professionals in different professions and qualifications in six different hospitals participated in this study. From these respondents 229(55.1%) were female and 181(44.9%) were male. Majority of respondents were in age group is 21-25; 173(42.2%) and the lowest age group is ≤ 20; 4(1%).The qualification of study participants is first degree; 213(52%), diploma; 168(41%) and specialists; 21(5.1%) and Second degree 8(2%). Among the study participants 180(43.9 %) are clinical nurses, 43(10.5%) are medical doctors, 25(6.1%) are health officer, 20(4.9%) are midwifery, 51(12.4%) are medical laboratory, 40(9.8%) are pharmacy and 51(12.4%) others. Minimum qualifications of participants were diploma and maximum were PhD degree.

From the respondents; 139 (33.9%) had work experience of ≤ 2 years; 108(26.3%) had work experience of 2-5 years; 75(18.3%) had work experience of 5-10 years and 88(21.5%) had work experience of > 10 years. More than half, 244(59.5%) of the respondents live alone and 37 (9%) of respondents had family member > four. One hundred fifty eight (38.5%) of the respondents had a monthly income within a range of 2001-3000 and only 12(2.9%) of respondents had monthly income of >4000 birr.

Among the respondents more than half 297(72.4%) had no other means of income; 113(27.6%) of respondent had other means of income (see Table 1).

Table1: Socio demographic characteristics of health professionals working at Addis Ababa health bureau owned hospitals 2013 **(n=410)**

Variables		Number	Percent (%)
Gender:	Male	181	44.1
	Female	229	55.9
Age:	≤ 20 years	5	1.2
	21-25 years	173	42.2
	26-30 years	115	28.0
	31-35 years	34	8.3
	36-40 years	27	6.6
	41-45 years	33	8.1
	≥ 46 years	23	5.6
Qualification:	Specialist	21	5.1
	Second degree/Masters	8	2.0
	First degree	213	52.0
	Diploma	168	41.0
Types of profession:			
	Medical doctor	43	10.5
	Health officer	25	6.1
	Clinical nurse	180	43.9
	Midwifery	20	4.9
	Medical laboratory	51	12.4
	Pharmacy	40	9.8
	Others	51	12.4

Work Experience:		
≤ 2 years	139	33.9
2-5 years	108	26.3
5-10 years	75	18.3
>10years	88	21.5
Monthly income:		
1000-1300	102	24.9
1301-1500	25	6.1
1501-2000	53	12.9
2001-3000	158	38.5
3001-4000	60	14.6
>4000	12	2.9
Other means of Income:		
Yes	113	27.6
No	297	72.4
Family member:		
One	25	6.1
Two	22	5.4
Three	36	8.8
Four	46	11.2
>Four	37	9
Alone	244	59.5

Of the respondents; 168(41%) had computer access from these 90(22%) at home; 32(7.8%) at work place and 48(11.7%) at both work place and home. From those who have computer access 55(13.4%) uses the computer to prepare report, 121(29.5%) for reading, 99(24.1%) to keep file, 90(22%) for internet access, 59(14.4%) for game playing and 2(0.5%) for other purposes. Among the total respondents more than half; 262(63.9%) are computer literate but the rest 148(36.1%) were not due to different reasons; 78(19%) had no time, 82(20%) had no access and 19(4.6%) had no interest to learn (see Table2).

Table 2: Computer access and literacy among health professionals working at Addis Ababa health bureau owned hospitals 2013 **(n=410)**

Variables	Number	Percent (%)
Computer access: (n=410)		
Yes	169	41.2
No	241	58.8
Place of computer access(n=169)		
Home	90	22.0
Work place	32	7.8
Home and work place	47	11.4
Computer use:(n=169)		
Prepare report		
Yes	55	13.4
No	114	27.8
Reading		
Yes	121	29.5
No	48	11.7
Keep files		
Yes	99	24.1
No	70	17.1
Internet use		
Yes	90	22.0
No	79	19.2
Game playing		
Yes	59	14.4
No	110	26.8
Computer literacy(n=410)		
Yes	262	63.9
No	148	36.1

Reasons for computer illiteracy(n=148)		
No time		
Yes	78	19
No	70	17.1
No access		
Yes	82	20.0
No	66	16.1
No interest to learn		
Yes	19	4.6
No	129	31.5

6.1.2. Health information seeking behavior and resource access of health professionals

From the total participants 339(82.7%) have experience of seeking health information among the respondents who have health information seeking behavior; 153(37.3%) seek daily, 119(29%) weekly and 67(16.3%) monthly for different reasons; 174(42.4%) to support their work, 259(63.2%) to update themselves, 78(19%) due to environmental competition, 119(29%) to answer a question for patient and 13(3.2%) for other purposes. The reasons for not seeking health information are having no access 37(9%), no specific source 32(7.8%), no interest 18(4.4%), no reason 16(3.9%) and having adequate knowledge 3(0.7%). Of the total respondents about resource access; 334(81.5%) have accessed books, 179(43.7%) accessed electronic materials, 174(42.4%) have manuals, 169(41.2%) use colleagues, 168(41%) use policy guidelines and 137(33.4%) accessed journals.

According to the study most health professionals prefer on-job training 202(49.3%), internet and electronics188 (45.9%), printing materials163 (39.8%), senior staff 140 (34.1%), in-service training133 (32.4%), colleagues89 (21.7%) and no preference 3(0.7%).

The accessibility of internet on the study area is around 58.5% even if there is a difference in accessed areas; 109(26.6%) at home and 75(18.3%) at work place.

The frequency of internet use to seek health information by health professionals is; daily 110(26.8%), two times a week 75(18.3%), two-three times a month 12(2.9%), once a month 25(6.1%) and around 18(4.4%) of respondents do not know the frequency of use internet. (See Table 3)

Table 3: Health information seeking behavior, health information resource access, internet access among health professionals working at Addis Ababa health bureau owned hospitals 2013 **(n=410)**

Variables	Number	Percent (%)
Health information seeking behavior**(n=410)**		
Yes	339	82.7
No	71	17.3
Frequency of health information seeking**:(n=339)**		
Daily	153	37.3
Weekly	119	29
Monthly	67	16.3
Reasons of health information seeking:(**n=339)**		
To support my work		
Yes	174	42.4
No	165	40.3
To update myself		
Yes	259	63.2
No	80	19.5
For competition		
Yes	78	19
No	261	63.7
To answer for patient		
Yes	119	29
No	220	53.7

Other purpose		
Yes	8	2
No	331	80.7
Reasons not seek health information**:(n=71)**		
I have adequate knowledge		
Yes	3	0.7
No	68	16.6
There is no specific source		
Yes	32	7.8
No	39	9.5
I don't have interest		
Yes	18	4.4
No	53	12.9
I don't have access		
Yes	37	9
No	34	8.3
I don't have reason		
Yes	16	3.9
No	55	13.4
Health information resource access**:(n=410)**		
Books		
Yes	334	81.5
No	76	18.5
Electronics		
Yes	179	43.7
No	231	56.3
Journals		
Yes	137	33.4
No	273	66.6

Protocol manuals		
Yes	174	42.4
No	236	57.6
Policy guidelines		
Yes	168	41
No	242	59
Colleagues		
Yes	169	41.2
No	241	58.8
health information resource preference**:(n=410)**		
Printing materials		
Yes	163	39.8
No	247	60.2
In service training		
Yes	133	32.4
No	277	67.6
Internet and electronics		
Yes	188	45.9
No	222	54.1
On job training		
Yes	202	49.3
No	208	50.7
Colleagues		
Yes	89	21.7
No	321	78.3
Senior staff		
Yes	140	34.1
No	270	65.9

No preference		
Yes	3	0.7
No	407	99.3
Access to internet**:(n=410)**		
Yes	240	58.5
No	170	41.5
Frequency of internet use**:(n=240)**		
Daily	110	26.8
Two times a week	75	18.3
Two-three times a month	12	2.9
Once a month	25	6.1
I don't remember	18	4.4

Regarding library access at work area, 272(66.3%) reported they have access in different size and materials. When we see the satisfaction of library service at work area, 156(38%) of the respondents partially satisfied, 69(16.8%) were least satisfied, 19(4.6%) were fully satisfied and 28(6.8%) of them have no access to it. Of the respondents who have no access to library, the effort to have library; 73(17.8%) discuss with staff, 60(14.6%) comments to manager and 5(1.2%) done nothing. One hundred sixty three (39.8%) of the respondents reported that their organization subscribes printing materials like book, journals etc. About their up to datedness and usefulness of the materials according to the respondents; 100(24.4%) said partially useful, 30(7.3%) totally useful, 27(6.6%) least useful and 4(1%) not useful. According to the respondents; 303(73.9%) have different resources in home from these 235(57.3%) have updated useful resources and most of the respondents; 176(42.9%) use these materials when there is a need, 66(16.1%) daily, 45(11) one-two days per week and 16(3.9%) did not use them totally. (Table 4)

Table 4: Availability of library services , satisfaction, attempts to access library and frequency of use among health professionals working at Addis Ababa health bureau owned hospitals 2013 **(n=410)**

Variables	Number	Percent (%)
Library service at work area: (**n=410**)		
Yes	272	66.3
No	138	33.7
Satisfaction with the service: **(n=272)**		
Fully	19	4.6
Partially	156	38
Least satisfied	69	16.8
No access	28	6.8

Attempts to access library at work area **:(n=138)**		
Comments to manager	60	14.6
Discuss with staff	73	17.8
Other	5	1.2
Accessibility of HIRs materials (book, journal etc): **(n=410)**		
Yes	163	39.8
No	247	60.2
Usefulness and updated of HIRs **:(n=163)**		
Useful	30	7.3
Partially useful	100	24.4
Least useful	27	6.6
Not useful	4	1
I don't refer them	2	0.5
HIRs available in participants home (book, journal etc) **:(n=410)**		
Yes	303	73.9
No	107	26.1
Usefulness and updated of participants home HIRs **:(n=303)**		
Yes	235	57.3
No	68	16.6
Frequency of use HIRs available at participants home **:(n=303)**		
Daily	66	16.1
When there is a need	176	42.9
One –two days per week	45	11
I don't use them totally	16	3.9

Two hundred eighteen (53.2%) of the participant get new cases and 285(69.5%) encountered a problem due to information limitation. To solve the problem, health professionals apply different mechanisms; 204(49%) of the respondents prefer discussing with colleagues method, 199(48.5%) use consultation method, 75(18.3%) give appointment to the patient. Due to this information limitation health professionals learnt different things; more than half of them 237(57.8%) learnt Importance of updating, Importance of pre-readiness, Importance of communication and Importance of being well informed. Almost all (97.3 %) of the respondents have access to training and 378(92.2%) need further training. (See Table 5)

Table 5: Encountering of problems due to information limitation and solving mechanisms and training access by health professionals working at Addis Ababa health bureau owned hospitals 2013 **(n=410)**

Variables	Number	Percent (%)
New cases: **(n=410)**		
Yes	218	53.2
No	192	46.8
Problem encountered due to information limitation: **(n=410)**		
Yes	285	69.5
No	125	30.5
Problem solving mechanism:(**n=285)**		
Consulting		
Yes	200	48.8
No	85	20.7
Discuss with staff		
Yes	201	49
No	84	20.5

Referring the patient		
Yes	83	20.2
No	202	49.3
Appointing the patient		
Yes	76	18.5
No	209	51
Learnt from that encountered problem **:(n=285)**		
Importance of updating	18	4.4
Importance of pre-readiness	16	3.9
Importance of communication	4	1
Importance of being well informed	10	2.4
All	237	57.8
Training Access **:(n=410)**		
Yes	399	97.3
No	11	2.7
Further training needs: **(n=410)**		
Yes	378	92.2
No	32	7.8

Among the 339(87.2%) who had health information seeking behavior in contrast with age group, majority of the age group 145(42.8%) were ages of between 21-25 years. Majority of respondents 188(55.5%) were female and most respondents had educational qualification of first degree 187(55.2%), diploma 147(43.4%) and specialist 5(1.5%). Most of the respondents had monthly income of between 2001-3000 Eth.birr and had no other means of income and the majority 206(60.8%) respondents had no family member or they live alone.

In association between health information seeking behavior and socio-demographic characteristics in chi-square analysis shows that there is a relationship with age. However gender, qualification, monthly income, other income, family size and work experience were not found significant (see table 6).

Table 6. Association of health information seeking behavior with socio demographic variables among health professionals working at Addis Ababa health bureau owned hospitals, 2013**. (n=339).**

Variables	**Health information seeking behavior**		X^2(P-Value)
	Yes	**No**	
Age			**12.840(0.046)*** **
≤20	5(1.5%)	0(0%)	
21-25	145(42.8%)	28(39.4%)	
26-30	93(27.4%)	22(31%)	
31-35	32(9.4%)	2(2.8%)	
36-40	17(5%)	10(14.1%)	
41-45	29(8.6%)	4(5.6%)	
≥46	18(5.3%)	5(7%)	
Gender			0.125(0.724)
Male	151(44.5%)	30(42.3%)	
Female	188(55.5%)	41(57.7%)	

Qualification			1.924(0.382)
specialist	5(1.5%)	0(0%)	
First degree	187(55.2%)	44(62%)	
Diploma	147(43.4%)	27(38%)	
Monthly Income			2.497(0.777)
1000-1300	87(25.7%)	15(21.1%)	
1301-1500:	19(5.6%)	6(8.5%)	
1501-2000	46(13.6%)	7(9.9%)	
2001-3000:	127(37.5%)	31(43.7%)	
3001-4000	50(14.7%)	10(14.1%)	
>4000:	10(2.9%)	2(2.8%)	
Other income			0.563(0.453)
Yes	96 (28.3%)	17(23.9%)	
No	243(71.7%)	54(76.1%)	
Family size:			3.312(0.652)
Alone	206(60.8%)	38(53.5%)	
One	19(5.6%	6(8.5%)	
Two	17(5%)	5(7%)	
Three	31(9.1%)	5(7%)	
Four	38(11.2%)	8(11.3%)	
>Four	28(8.3%)	9(12.7%)	
Work experience			6.409(0.093)
≤2 years	113(33.3%)	26(36.6%)	
2-5 years	97(28.6%)	11(15.5%)	
5-10 years	57(16.8%)	18(25.4%)	
>10 years	72(21.2%)	16(22.5%)	

P_value=0.05-0.01*** 0.01-0.001** <0.001*

Among the respondents 339(87.2%) who had health information seeking behavior 150(44.2%) had computer access at different place. From these only 25(78.1%) had at work place and from the respondents 232(68.4%) learnt computer. Majority had internet access 218(64.3%) but the frequency of internet use is different 98(49.2%) use daily and 7(3%) of them did not know the frequency of using internet. Most of the respondents had library access 234(69.1%) but majority of the respondents did not get different printing materials at work place 202(59.5%) and most of them had training access 331(97.6%). In chi-square analysis health information seeking behavior was found to have relationship with computer access, place of computer access, computer literacy, internet and library access, however in-service training accessibility of books, journals etc at work area were not found significant. (See table 7)

Table 7. Associations of health information seeking behavior with computer, internet and training access, frequency of use among health professionals working at Addis Ababa health bureau owned hospitals, 2013**. (n=339).**

Variables	**Health information seeking behavior**		X^2(P-Value)
	Yes	**No**	
Computer Access			**7.409(0.006)****
Yes	150(44.2%)	19(26.8%)	
No	189(55.8%)	52(73.2%)	
Place of computer access			**11.614(0.009)****
Home	79(52.7%)	10(52.6%)	
Work place	25(16.6%)	7(36.8%)	
Both	46(30.7%)	2(10.6%)	
Computer literacy			**17.447(0.000)***
Yes	232(68.4%)	30(42.3%)	
No	107(31.6%)	41(57.7%)	
Internet access:			**26.854(0.000)***
Yes	218(64.3%)	22(31%)	
No	121(35.7%)	49(69%)	

Frequency of internet use			**29.103(0.000)***
Daily	98(49.2%)	12(29.3%)	
Two times a week	64(32.1%)	11(26.9%)	
Once a month	19(9.2%)	6(14.7%)	
Two-three times a month	11(5.5%)	1(2.4%)	
I do not know	7(3%)	11(26.9%)	
Library Access:			**6.321(0.012)****
Yes	234(69.1%)	38(53.6%)	
No	105(30.9%)	33(46.4%)	
Accessibility of books, journals etc at work area			0.665(0.415)
Yes	137(40.4%)	25(35.3%)	
No	202(59.6%)	46(64.7%)	
Training access			0.782(0.376)
Yes	331(97.6%)	68(95.7%)	
No	8(2.4%)	3(4.3%)	

P_value=0.05-0.01*** 0.01-0.001** <0.001*

Among 339 respondents reported that 201(85.5%) economy, 185(86%) time, 158(86.8%) low prevalence of disease and new cases, 159(80.7%) organizational infrastructure, 122(83.6%) personal initiation, 93(84.5%) educational status, 60(87%) culture and 50(89.3%) geography have effect on HI seeking behavior. In chi-square analysis health information seeking behavior was found to have relationship with low prevalence of disease and new cases, however economy, time, organizational infrastructure personal initiation educational status culture and geography were not found significant. (Table 8)

Table 8. Association of health information seeking behavior with other factors among health professionals working at Addis Ababa health bureau owned hospitals, 2013**. (n=339).**

Variables	Health information seeking behavior		X^2(P-Value)
	Yes	No	
Economy			3.121(0.077)
Yes	201(59.2%)	34(47.8%)	
No	138(40.8%)	37(52.2%)	
Time			3.572(0.059)
Yes	185(54.5%)	30(42.2%)	
No	154(45.5%)	41(57.8%)	
Organizational infrastructure			1.030(0.310)
Yes	159(46.9%)	38(53.5%)	
No	180(53.1%)	33(46.5%)	
Low prevalence of Disease and new cases			**3.899(0.048)****
Yes	158(46.7%)	24(33.8%)	
No	181(53.3%)	47(66.2%)	
Personal initiation			0.122(0.727)
yes	122(35.9%)	24(33.8%)	
No	217(64.1%)	47(66.2%)	
Educational status			0.364(0.546)
Yes	93(24.7%)	17(23.9%)	
No	246(72.6%)	54(76.1%)	
Culture			1.058(0.304)
Yes	60(17.6%)	9(12.6%)	
No	279(82.4%)	62(87.4%)	
Geography			1.975(0.160)
Yes	50(14.7%)	6(8.4%)	
No	289(85.3%)	65(91.6%)	

P_value=0.05-0.01*** 0.01-0.001** <0.001*

Association between health information seeking behavior and other independent variables showed that in crude analysis; respondents who had computer access were better in health information seeking than those workers who have no computer access, OR=2.172,95% CI(1.232,3.831). Low disease prevalence and new cases have higher than high disease prevalence and no new cases on health information seeking behavior, OR=1.788, 95% CI (1.010, 3.165). Seeking of health information is higher among health professionals those who have train computer, OR=2.963, 95% CI (1.755, 5.002) than those who have not trained and health information seeking is higher among health professionals who have internet and library access, OR=4.013, 95% CI (2.315, 6.954) and OR=1.940, 95% CI, (1.116, 3.375) than those who have not accessed internet and library respectively. Frequency of internet use is also have a great impact on health information seeking behavior in crude analysis daily users have 0.136,95% CI (0.049,0.0381) more than other users and two times a week users have 0.078,95% CI (0.025,0.239) than other users. Once a month users and two-two three times a month users have 0.058, 95% CI (0.006, 0.552) and 0.109, 95% CI (0.035, 0.343) respectively. However age found not to be statistically significant with health information seeking behavior by binary logistic regression. To clear out any confound all the variables were taken to multivariate analysis; computer literate had 2.430, 95% CI (1.249, 4.029) times health information seeking behavior than computer illiterate. Internet access had also 3.031, 95% CI (1.636, 5.616) times higher in health information seeking than that had no access to internet. Health professionals who had a library access 1.861, 95% CI (1.048, 3.304) times higher on health information seeking than that had no library. Low disease prevalence and new cases 1.961,95% CI (1.083,3.348) times more than high disease prevalence and no new cases, so computer access by this analysis found not to be statistically significant. Once a month users are not significant in multivariate analysis Daily internet users have 7.043, 95% CI (2.104, 23.608) times more seek health information than other frequent users. Two times a week and two-three times a week internet users have 6.287, 95% CI (1.860, 21.248) and 3.999, 95% CI (0.990, 16.143) than non internet users respectively. (See table 9).

Table 9. Binary logistic regression of factors that affect health information seeking behavior with other independent variables among health professionals working at Addis Ababa health bureau owned hospitals, 2013**. (n=339).**

Variables	Health information seeking behavior	
	COR(95% CI)	AOR(95% CI)
Computer Access		
Yes	2.172(1.232, 3.831)**	1.186(0.623,2.258)
No	1.0	1.0
Computer literacy		
Yes	2.963(1.755,5.002) **	2.430(1.249,4.029)**
No	1.0	1.0
Internet Access		
Yes	4.013(2.315,6.954) **	3.031(1.636,5.616)*
No	1.0	1.0
Frequency of internet use		
Daily	0.136(0.049,0.0381)*	7.043(2.104,23.608)**
Two times a week	0.078(0.025,0.239)*	6.287(1.860,21.248)**
Once a month	0.058(0.006,0.552)**	20.994(1.987,221.801)
Two- three times a month	0.109(0.035,0.343)*	3.999(0.990,16.143)***
I do not know	1.0	1.0
Library Access		
Yes	1.935(1.150,3.256) **	1.861(1.048,3.304)***
No	1.0	1.0
Low disease prevalence and new cases		
Yes	1.709(1.000, 2.922) **	1.961(1.083,3.348)***
No	1.0	1.0

P_ value=0.05-0.01*** 0.01-0.001** <0.001*

6.1.3. Factors that affect health information seeking behavior

Around 235(57.3%) of the respondents mentioned that the most important factor for health information seeking behavior is economy, time 215 (52.4%), organizational infrastructure 197(48%), disease prevalence 182(44.4%), personal initiation 146(35.6%) and educational status 110(26.8%) but geography is the least 56(13.7%). (See table 10)

Table: 10. Other factors that affect health information seeking behavior among health professionals working at Addis Ababa health bureau owned hospitals, 2013 **(n= 410**

Variables	Number	Percent (%)
Economy	235	57.3
Time	215	52.4
Organizational infrastructure	197	48
Low disease prevalence and new cases	182	44.4
Personal initiation	146	35.6
Educational status	110	26.8
Culture	69	16.8
Geography	56	13.7

6.2. QUALITATIVE RESULTS

Direct observation checklist was used to gather data.

6.2.1. Accessibility of health information resources

Some materials stored or found in departments rather than one central area where most of the staffs accessed. From the six hospitals, four have library however the size, quality, location or site and the materials they contain are different from hospital to hospital. In most hospitals the location is not as such central. Even if there are books, journals and other important resources found in departments. Around OPD and some department there are posted banners on doors. In some hospitals there are computers in every department but most of them are not functional due to different reasons since the reasons are different from hospitals to hospital some said don't have socket, some said the officials give them warning don't use them without giving a permission etc. In some hospitals there is no library, internet access, journals books, research papers and any electronic materials.

6.2.2. Utilization of available information resources

Most health professionals in all hospitals had a problem of using the resources available in the institutions. Few were observed using their laptop computer, journals, books and some of them use internet for research, e-mail and chat purpose even if there is a problem of connection and searching skill. More than half of the hospitals have morning session and discussion. During observation there is a problem of initiation to use the available materials. The most common accessible materials in some hospitals are text books and treatment guidelines. These materials are most frequently used by health professionals.

7. DISSCUSSION

The study showed that around (82.7 %) of study participants reported that they seek health information for different reasons. But on similar study conducted Bahrdar the finding is different (7); where the overall health information seeking was 97.3% and also there was a study conducted in Addis Ababa the result showed around 94.8% seek information (8). Even though there is a variation in degree of health information seeking behavior the majority of health professionals have access to health information resources to give quality health care services (8, 22,27,38,). This finding is supported by several studies who have reported that libraries were widely used resources for health information by students and health professionals, however; other studies have shown that many health professionals were reluctant to use libraries, or they did not have access (22).

In this study health professionals were asked how often they sought health information from different areas, 153(37.3%) said daily, 119(29%) weekly and 67(16.3%) monthly. This finding is different from the study conducted in other area, where only 18% sought health information daily (17). This finding is also supported by a study conducted on US physicians where they spent a minimum of 50 minutes per night to search disease, drug and continuing medical education information(8).

Books 334(81.5%), electronics 179(43.7%) and protocol manuals 174(42.4%) were reported to be the most accessible resources and frequently used where as journals were the least used sources 137(33.4%). This finding was different from similar study in Bahrdar (7) except books and protocol manuals because electronics source were least choice but this finding is more or less similar to Addis Ababa (8). This result also differ from a study conducted in Africa, specially Nigeria; According to the research, the most frequently used resources were journals, medical text books, discussion with colleagues and internet searching (28). It is also different from study finding from Uganda; where discussion with colleagues, text book and internet were the common resources of health information (29, 30). This is supported by a study done in America, Kentucky electronics specially internet users seek health information more frequently (17).

On job training, internet and electronic and printing materials were reported as the most preferable resources ;from these on job training 202(49.3%) is the most preferred resource but discussion with senior staffs 140(34.1%) and colleagues 89(21.7%) were the least preferable. This result is different from a study conducted in Bahrdar, the result shows they were poorly practiced, 9(2.7%) (7).

However majority of respondents reported 264(64.4%) personal initiation is not a factor to seek health information, there is poor personal initiation and utilization of resources among health professionals from observation.

Majority of the respondents have library access but from the rest only 60 (14.6%) comments to manager to have library at work area but it is relatively better than a study conducted in Bahrdar (7). Because lack of library access was most important reason health professionals do not access health information (7, 17, 29).

Currently ICTs play a major role in our life specially related to health information searching, disseminating and sharing among health professionals in different parts of the world with minimum cost and little time (2). The result of this study indicates that most health professionals 262(63.9%) computer literate even if more than half 241(58.8%) of them had no access to computer. But the accessibility of computer is better than the study conducted in Bahrdar, where 63.4% have not access (7). This finding is supported by a study conducted on clinical nurses, where 56% of them had computers at home and 50% of them reported that they had computer in a central convenient location at work area (22). The literacy of computer result was two times higher than a study finding in Bahrdar (7) but much lower than a finding in Ibadan, Nigeria where 93% were computer literate (25). The literacy is also higher when compared with the previous study conducted in Addis Ababa; the result was 46.7% (8, 9).

The reason of why not learn computer, around 82(20%) had no access to learn, 78(19%) no time and 19(4.6%) had no interest to learn. These results show smaller than the study in Bahrdar (7) but higher than a study in Nigeria where only 7% of them were illiterate computer (25). This finding is also different from previous study conducted in Addis Ababa, 53.3% (44) computer illiterate with the same reason as Nigeria and Bahrdar.

Most of the respondents in the study had characteristics of health information seeking behavior, 339(82.7%); from these 240(58.5%) of them accessed and used internet in different frequency, 110(28.9%) used daily and 25(6.1%) used once a month from health professionals who had no internet access. This result is different from a result found in other studies (7). 104(25.4%) consult seniors, exercise books and hand out and 92(22.4%) used library to seek health information. This finding is less than other findings which indicates that most of them had a habit of using internet.

Majority of health professionals accessed library at work area 272(66.3%). This finding is greater than a finding of Andrew, et,al where 57% of them accessed library (22). When comparing this result with finding of Mulusew, less accessible where 74.3% of them accessed library (7). Most of them 156(38%) were partially satisfied but only 19(4.6%) were fully satisfied by library service. This study showed that almost all library services were not comfortable to health professionals. This study also assessed accessibility, the usefulness and up-datedness of materials found in the library in the study area; 247(60.2%) said there is no subscribing of printing materials. Even if there were printing materials, 100(24.4%) said the materials were partially useful and only, 30(7.3%) said the materials were fully useful and updated. This result clearly showed that most of the materials found in study area were not recent and up-to-date. Regarding the factors that affect health information seeking behavior among health professionals in the study area. Economy 235(57.3%) had a great hindering effect, time 215(52.4%) had effect next to economy but geography 56(13.7%) had a least effect on health information seeking behavior. This study finding is supported by a study conducted by Anwar F. and Shamim A (27, 8).

According to the result, more than half 285(69.5%) respondents encountered a problems due to health information limitation. This result clearly showed that most health professionals had knowledge gap. This is supported by studies conducted by different researchers in related topics in developing countries (2, 8, 28, 37).Health professionals apply different techniques to solve encountered problems due to limitation of information. From these, 201(49%) discuss with staffs, 200(48.8%) consult seniors.

This finding was more or less higher than the study conducted on the same topic in Bahrdar, where 31.7% discuss with staff and 3.1% consult seniors (7). This result was lower than the result found in clinical nurses, where 60% of them consult daily (22). According to a study in different countries like Uganda, Addis Ababa, Iran and others counseling is the most frequently used health information resource (8, 28, 30).

The study also assessed how health professionals selected to get training, when they got the training and whether they need further training. More than half of the respondents 236(57.6%) were got training with in last 6 months and only 69(16.8%) of respondents were got training with in last 3 month, even if 181(44.1%) said assigning of training was randomly only, 32 (7.8%) assigned based on concern. This result is totally different from previous study found in Bahrdar, in where assigning of training was base on concern (7). But this result is the same as Addis Ababa training trends, where the process is based on head (8). Due to this reason, 378(92.2%) of them needed further training.

8. STRENGTH AND LIMITATIONS OF THE STUDY

8.1. STRENGTH OF THE STUDY

- The research used adequate sample size and tries to include all types of health professionals.
- The study has high (97.1%) response rate, therefore, it is possible to make good generalization.
- Used as baseline information, the findings of this study will have great contribution for further studies.
- The study considered and applied all necessary activities to minimize errors that can compromise findings.

8.2. LIMITATION OF THE STUDY

- It is difficult to show cause and effect of associations among variables on this study because it is cross sectional survey.
- There may be social interference during filling the questionnaire, due to this reason there may exist bias.
- Difficulty of getting recent related literatures.
- All of the significant relationships among variables may not have been measured.

9. CONCLUSION AND RECOMMENDATIONS

9.1. CONCLUSIONS

Health professionals need recent and up to date health information to deliver quality health care services and update themselves to answer a question for patient and to support a patient by evidence based decisions. Study shows that health professionals rarely use electronic resources though those more educated and who are younger may be more likely to use electronic resources. This is difficult to access in developing countries due to various reasons like economy, infrastructures and others. Findings of the study also showed that the above mentioned facts were raised by different studies.

- Majority of health professionals have characteristics of seeking health information in different frequency for different purposes.
- The most frequently used information source in almost all study area was medical text books.
- Majority of respondents prefer on job training, electronics and internet.
- Almost all respondents of health professionals need to have further training to support their work.
- More than half of the respondents have access to library with different size, quality but most respondents are less satisfied.
- Majority of respondents encountered a problem due to limitation of health information. Most of them choose to discuss with staff and consult seniors to solve the encountered problems.
- Economy ,time, organizational infrastructure, low disease prevalence and personal initiation are the most common factors in seeking of health information
- Even if most of the respondents have no access to computer more than half of them have access to internet in different areas.
- More than half of the respondents have no computer access but the accessibility of internet is high in different areas.
- More than half of health professionals are computer literate.
- Accessibility of computer at work place is less.

9.2. RECOMMENDATIONS

Reliable information and effective communication are crucial elements in health care practices. Due to this reason

- All concerned body like FMOH, RHB and hospitals must arrange for health professionals further on –job training on ICT and related to their profession.
- Since health professionals need training of computer, concerned bodies must access these professionals to train computer.
- To increase or facilitate usage of internet to seek health information by health professionals in work place there must be computer.
- Libraries and health institutions must be equipped with updated medical books and related literatures because books are the most common sources.
- Officials must work in information sharing issues between health professionals like preparing morning session place and time.
- Further study is necessary on every professions and qualifications separately.

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11. ANNEXES

Annex I: Information sheet

Participant information sheet

Addis Ababa University School of Public Health and Information Science, department of health informatics.

The research title is health information seeking behavior among health professionals working under Addis Ababa health bureau hospitals.

Background information

Health professionals are the backbone for quality health service delivery and care in prevention of both communicable and non communicable disease and give treatment. To give these quality services recent health related information, knowledge, skill and using technologies and resources is mandatory.

Objective of the study

The main purpose of the study is to assess health information seeking behavior among health professionals working at Addis Ababa health bureau hospitals.

Benefits for participants

There is no incentives for participants from this study, participation in this study and respond questions honestly is very important to improve the existing resources and access in their organization.

Risk and complication

There is no any secret idea and risk on the study subjects due to participating in the study. No need of writing name to secure the confidentiality of the study participants. Other than the investigator and advisors no one can access collected data.

Assurance of principal investigator

I put my signature below to confirm you that I take over the responsibility for the scientific ethical and technical conduct of the research project and for provision of progress reports fort all stakeholders of the research project.

Belachew Aymiro(PI)

Signature:_____ Date:_____

Annex II: consent form

Informed Consent Form for Quantitative survey questionnaires:

My name is ----------. I am working temporarily as a data collector with the school of information science and public health Addis Ababa University, which is conducting a study among health professionals. The objective of the present study is to assess the **health information seeking behavior of health professionals**. All health professionals are included in this study for which it is being conducted elsewhere. During the interview you will be asked some short questions about your background, about health information and health information seeking behavior, etc. Your answers will be recorded on a survey questionnaire. You may feel uncomfortable or experience some emotional stress from being asked some of the personal questions. No personal identifiers will be attached/ recorded to the interview. All the data obtained will be kept strictly confidential by using only code numbers and will be stored in locked file cabinets at Addis Ababa University, to be accessed only by the principal investigator, and destroyed immediately when the study is finalized.

Your participation in the study is upon purely voluntary basis. What we learn from this study will be used to generate information necessary for the planning to improve, redesign and scale up the health information accessibility, ICT infrastructure and patient care and management all health care facilities in our country. The interview will be conducted in private and will take 30 minute - 1hr. During the interview (discussion) period, if you feel inconvenient, you can interrupt and clarify inconvenience, appoint to other time or even withdraw any time after you get involved in the study. Your honest and genuine participation in responding to the questions prepared is very important & highly appreciated. If you agree to participate in this study I will interview you.

Would you be willing to participate?

If yes, proceed. If no, thank you and stop here.

Code of interviewee _____ Signature _____Date_____

Code of interviewer _____ Signature _____Date_____

Annex III: Questionnaire

Questionnaire I

Questionnaire (quantitative)

Addis Ababa University School of public health and information science department of health informatics

Questionnaire for health professionals

Name of organization _____

Data collector name _____

Date _____

S. No	Question	Possible responses	skip
I. Socio-demography of study subject			
01	Gender	1. Male 2. Femal	
02	Age	1.≤20 5. 36-40 2. 21-25 6. 41 -46 3. 26-30 7. >47 4. 31-35	
03	What is your Profession?	1. Medical doctor 2. Health officer 3. Clinical Nurse 4. Midwife nurse 5. Other please specify _____	
04	Educational qualification	1. Specialist 2. Second degree/Masters 3. First degree 4. Diploma 5. Doctorate degree	

05	How many years work experience do you have?	1. ≤2years 2. 2-5years 3. 5-10years 4. >10years	
06	Salary	1.1000-1300 2.1301-1500 3.1501-2000 4.2001-3000 5.3001-4000 6.>4000	
07	Do you have children?	1. Yes 2. No	
08	If your answer for question number 07 is **yes**; how many?	1. One 4. Four 2. Two 5. ≥Five 3. Three	
09	How many family members do you have with you currently	1. Alone 4. three 2. One 5. four 3. Two 6. >4	
11	Do you have other means of income?	1. Yes 2. No	
12	Do you save money from your monthly income?	1.yes 2. No	
13	If your answer for question number 10 is **no;** what is the cause **(You can choose more than one)**	1. Having large family 2. Using for learning 3. Due to low salary 4. Using internet 5. Having high socials 6. Others_____	

II. Questions related to information seeking behavior and access			
001	Do you have health information seeking behavior?	1. Yes 2. No	
002	If your answer for number 001 is **yes** what is your reason? **(You can choose more than one)**	1. my own needs 2.. For competition 3. to update myself 4. to answer questions for patient 5.emergency of new cases 6. 1 and 2 7. 1,2 and 4	
003	If your answer for number 001 is **No** what is your reason behind that?	1. I have adequate knowledge 2. There is no specific source 3. I don't have interest 4. I don't have access 5. No reason	
004	Have you get a new case every day?	1. Yes 2. 2. No	
005	Do you learn computer?	1. Yes 2. 2. No	
006	If your answer for question number 005 **No** why?	1. I don't have time to learn 2. I have no access to learn 3. I am not interested to learn 4. it is not useful to me 5. other_____ 60	

007	How often did you seek health information?	1. Daily 2. Weekly 3. Monthly 4. Never	
008	How much do you feel motivated to seek health information?	1. High 4. Very low 2. Medium 5. Very high 3. Low	
009	Do you have computer?	1. Yes 2. No	
010	If your answer for question number 009 is **yes** where?	1. At home 2. At work 3. At both	
011	If your answer for question number 009 is **yes** for what purpose do you use it? (**You can choose more than one)**	1. Preparing report 2. Using internet 3. Reading 4. To save files 5. 2,3 and 4 6. All	
012	Which of the following do you access to get health information to support your work? **(You can choose more than one)**	1.Books 2.Electronic resource 3.Journals 4.Manuals 5.Colleagues 6.Policy guidelines	

013	Which media sources are available at your home? **(You can circle all possible answers)**	1.Radio 2.TV 3. Computer with internet 4. Computer without internet 5. Journals 6.Mobile 7. Other _____	
014	What type of methods prefers to get health information? **(You can choose more than one)**	1.Printingmaterials 2. in-service training 3.Internet 4. on-job training 5.Colleagues 6.Senior staffs 7. No preference	
015	Do you have access to internet?	1. Yes 2. No	
016	If your answer for question number 015 is **No** how do you access information?	1. From library 2. Internet café 3. Borrowing from other places 4. Down loading from other places while traveling for other purposes 5. Consulting my seniors, exercise books, handouts 6. Other _____	
017	If your answer for 015 is **yes** indicate where	1.at home 2. at work place 3.Internet cafe 4.Public library 5. 1 and 2 6. 1,2,3 62	

018	How often do you use an internet to get health information to support you work?	1. Daily 2. Two times a week 3. Two-three times a month 4. Once a month 5. I don't know	
019	If your answer for 015 is yes what purpose do you use it?	1. e-mail 2. Health information seeking 3.chat 4.News 5.Research 6. Business	
020	If your answer for question number 017 is 2 are you satisfied with the internet facility in your work place?	1. Fully 2. Partially 3. Least satisfied 4. I have no access 5. No comments	
021	Did you encounter any problem in searching for information on the internet?	1. Yes 2. 2. No	
022	If your answer for question number 021 is **yes** what major problem did you encounter? **(You can choose all possible answers)**	1.Poor internet connection 2. High cost 3. Searching skill 4. Too much information 5. Don't know where to find 6.Other _____	

023	What attempt did you do to improve the quality?	1. Reporting to the mentors 2. Leaving as it is 3. Using another computer 4. Returning another day	
024	Do you have library service in your working area?	1. Yes 2. No	
025	If your answer for question number 023 is **yes** are you satisfied by the collection?	1.Fully 2.Partially 3.Least satisfied 4. I have no access to it 5. No comment	
026	If your answer for question number 024 is **No** what did you do to have library?	1. Comments to manager 2. Discuss with staff 3.other _____	
027	Does your organization subscribe printing materials (journals, books, research Papers and others related to your work?	1.Yes 2. No	
028	If you answer for question number 027 is **yes** are the materials up to date and useful?	1.Fully useful 2.Partially useful 3.Least useful 4.Not useful 5. I don't refer them	
029	Do you have follow up (an ongoing) in service training in the past?	1. Yes 2. No	

030	If **yes** for number 029, when did you have the last training?	1. Within last 12 month 2. Within last 6 month 3. Within last 3 month 4. More than 12 month 5. I don't remember	
031	How training is assigned to health professionals in your organization?	1. Orderly 2. Randomly 3. Based on concern 4. Based on head selection 5. Through discussion	
032	Do you think you need further training related to your profession?	1. Yes 2. No	
033	What factors do you think will affect accessing of health information seeking for You? **(You can choose all possible answers)**	1.Time shortage 2.Economy 3.Educational status 4.Organizational infrastructure 5.Culture 6.Personal initiation 7.Geographical 8.Low prevalence of disease and new case	
034	Do you face to problem on your work due to health information limitation?	1. Yes 2. No	

035	If your answer for question number 030 is **yes** how do solve it? **(You can choose more than one)**	1. Consulting 2. Discus with colleagues 3. Referring the patient 4. Appointing the patient 5. Other _____	
036	What do you learn from that encountered problem?	1. importance of update information 2. Importance of pre readiness 3. Importance of communication 4. Importance of being well informed 5. All	
037	Do you have your own books; hand outs research papers softcopy documents etc in your home?	1. Yes 2. No	
038	If yes for 033, are they updated and relevant to your work?	1. Yes 2. No	
039	If yes how often do you use them?	1. Daily 2. When there is a need 3. One-two days per week 4. I don't use them totally	

NB: Sources for questionnaire (7)

Annex IV: Observational checklist

Addis Ababa University School of public health and information science department of health informatics

Name of organization _____

Date _____

Code of observer_____ Time_____

No.	Information source	1. Yes 2. No	Recommendations
1	Library service		
2	Manual and standard guidelines		
3	Internet service		
4	Computer room		
5	Research papers		
6	Hand outs		
7	Journals		
8	Books		
9	Soft copy sources		
10	Training		
11	Consultation		
12	Computer with each working room		
13	Morning session and case presentation		
14	Report papers		
15	Peer/colleagues discussion		
16	Observing professionals while using any information sources		
17	Questioning and answering between patient and professionals		

Figure 4: Checklist table showing observation checklist for gathering data from Addis Ababa health bureau owned hospitals, 2013. **NB. Sources for questionnaire (7)**