

## Knowledge, access and usage pattern of HINARI by researchers and clinicians in tertiary health institutions in South-West Nigeria

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### Summary

**Introduction:** The digital divide is a global challenge. The Health Internetwork Access to Research Initiative (HINARI) is one of the most successful efforts aimed at bridging the digital divide in access to health information in developing countries. There is a dearth of empirical studies on usage pattern of this resource in Nigeria. The aim of this study was to assess knowledge and usage pattern of HINARI by clinicians and researchers in tertiary health institutions in Southwestern Nigeria.

**Methodology:** A descriptive cross-sectional survey was conducted among 1150 clinicians and researchers in the 12 tertiary health institutions that had access to HINARI. A standardized, self-completed, 31-item questionnaire was used for data collection. It elicited information on demographic profile, pattern of usage and constraints to use of HINARI.

**Results:** The majority (72.0%) were aware of HINARI however, only 35.1% have had a formal training on how to use it. Sixty-eight percent (68.0%) had ever used HINARI resources and 62.4% of these did so during the month preceding the study. The most frequently used HINARI resources were MEDLINE/PubMed (53.2%), full text journal articles (55.0%), and reference materials (28.5%). Previous users (50.0%) encountered problems in accessing HINARI; with lack of password being the main challenge for access.

**Conclusion:** Knowledge and use of HINARI resources are high. However, clinicians and researchers are not deriving full benefits from HINARI because few had received training on how to use it. A learner-centered training and wide distribution of the HINARI User Name and Password within the institutions is recommended to address this problem.

**Keywords:** HINARI, Health professionals, researchers, librarians, usage pattern, health institutions, Nigeria

### Résumé

**Introduction:** La déconnection numérique est un défi mondial. L'initiative d'accès au travail digital en santé et la recherche (HINARI) est l'un des efforts les plus réussis visant à réduire la déconnection

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numérique dans l'accès à l'information sanitaire dans les pays en développement. Il ya très peu d'études empiriques sur le mode d'utilisation de cette ressource au Nigeria. Le but de cette étude était d'évaluer les connaissances et le mode d'utilisation de HINARI par les médecins et les chercheurs dans les établissements de santé tertiaires du sud-ouest du Nigeria.

**Méthodologie :** Une étude transversale descriptive a été menée auprès de 1150 médecins et chercheurs dans les 12 établissements de santé tertiaires qui avaient accès à HINARI. Un questionnaire standardisé de 31 éléments a été utilisé pour la collecte des données. Ils complétaient des informations sur leur profil démographique, le motif de l'utilisation et des contraintes à l'utilisation de HINARI.

**Résultats:** La majorité (72,0%) était au courant de HINARI cependant, seulement 35,1% ont eu une formation formelle sur la façon de l'utiliser. Soixante-huit pour cent (68,0%) avaient déjà utilisé les ressources HINARI et 62,4% d'entre eux l'ont fait au cours du mois précédant l'enquête. Les ressources HINARI plus fréquemment utilisés étaient MEDLINE / PubMed (53,2%), en texte intégral des articles de journaux (55,0%) et des matériaux de référence (28,5%). Les utilisateurs précédents (50,0%) ont éprouvé des difficultés à accéder à HINARI et l'absence de mot de passe est le principal défi pour l'accès. La connaissance et l'utilisation des ressources HINARI sont élevées. Cependant, les médecins et les chercheurs ne tirent pas pleinement profit de HINARI parce que quelques-uns avaient reçu une formation sur la façon de l'utiliser.

**Conclusion:** Une distribution de la formation largement centrée sur l'apprenant du HINARI (nom d'utilisateur et mot de passé) dans les institutions est recommandée pour régler ce problème.

### Introduction

High-quality information is essential for effective health systems, scientific progress, and development [1]. In the past, many health institutions in sub-Saharan Africa (SSA) had limited access to information resources and had to rely on out-of-date textbooks and journals. However, the past two decades has witnessed a tremendous increase in the availability and use of electronic information resources including online databases, Online Public Access Catalog (OPAC), e-conference, e-mail discussion forums, full-text journals, e-books, scholarly websites, bulletin boards, gateways, portals, digital



archives and institutional repositories among others. Furthermore, the move of journals from hard copy to online formats has opened up the possibility of real-time access to the resources by interested professionals in low-income countries [1]. Despite the increase in access and use of electronic information resources, the global digital divide persists placing researchers and scientists from developing countries especially those from SSA at a disadvantage.

Several governments, health institutions and Non-governmental Organizations (NGOs) have responded to this challenge through initiatives aimed at bridging the digital divide. One of the most visible and successful of such programs is the World Health Organization (WHO) led Health Internetwork Access to Research Initiative now known as HINARI Access to Research in Health Programme. HINARI was launched in 2002 with about 2000 medical journals from six major biomedical publishers [2]. HINARI currently provides free or low cost access to a collection of 11,400 journals, 18,500 e-textbooks and about 70,000 other information sources including databases, clinical guidelines and reference materials from several publishers of scientific, technical and medical (STM) journals covering the field of medicine, nursing and related health and social sciences targeted at health workers, researchers, scientists, students, policy makers and others in not-for-profit organizations in developing countries [3, 4].

Based on total GNI (World Bank figures), GNT per capita (World Bank figures), United Nations Least Developed Country (LDCs), List and Human Development Index (HDI), institutions in countries with Gross National Product (GNP) per capita below \$1000 are regarded as poor therefore, are eligible for free access to HINARI while those with GNP \$1000-\$3000 pay a fee of \$1000 yearly [5]. HINARI is targeted at government offices, educational institutions and Not-for-profit organizations involved in health care, research, teaching and policy making. Within countries that are eligible, HINARI is targeted at health sector institutions Universities:- such as schools of medicine, nursing, public health and pharmacy: Research Institutes, University Teaching Hospitals, Medical libraries, government institutions. Institutions within eligible countries are expected to register for access by completing a form at the HINARI Website - <http://www.who.int/hinari>. Upon registration, the HINARI Team issues a User Identification and Password to the contact person who is expected to distribute it widely within the institution.

HINARI was initially a collaboration between the World Health Organization (WHO) and six major biomedical publishers namely Blackwell, Springer Link, Elsevier, Harcourt Worldwide STM Group, John Wiley, Wolters Kluwer and other partners including Yale University. Today, more than 150 worlds' leading scientific, technical and biomedical publishers/ partners across the globe have joined the programme. These publisher / partners are offering more than 15,000 information resources in HINARI and many others are joining the programme and currently provide content in over 30 different languages free to local, non-profit health institutions in over 100 eligible countries [6]. This is aimed at strengthening public health services by providing health professionals, researchers, students and policy makers' access to high quality, timely and relevant information through the Internet. According to Dr. Harlem Brundtland, the former WHO Director General, the launch of HINARI is "the first step ever taken to bridge the health information gap between rich and poor countries" [7].

HINARI has remained popular in Nigeria since its introduction in 2002. To date over 250 educational, health and research institutions in Nigeria have registered to have access to the resources in HINARI. Many capacity building workshops have been conducted for researchers and clinicians by librarians in some institutions in the country in order to promote the use of HINARI resources. Unfortunately, HINARI remain underutilized by those for whom it is available in the country. For example, a survey among clinicians in Ibadan where HINARI had been available since 2002 revealed that 58% of the respondents did not use this resource [8]. A similar study among Health Information Professionals (HIP) in selected African countries revealed that 40% respondents never used HINARI [9]. There is currently no systematic investigation of the factors underlying utilization of HINARI resources in Nigerian tertiary health institutions with access to the resources. The study whose findings are presented in this article was designed to address this problem. The main objective of the study was to determine knowledge, the pattern of usage of HINARI and identify the challenges to use of the resources among researchers and clinicians in tertiary health institutions in Southwest Nigeria.

## Methodology

### Settings

This study was conducted in 12 tertiary health institutions in Southwest Nigeria. The 12 health institutions are located in six states namely: Ekiti,



Lagos, Ogun, Ondo, Osun and Oyo. These tertiary health institutions consisted of six Colleges of Medicine/University Teaching Hospitals, two Federal Medical Centers (FMC), three Specialist Hospitals and one Research Institute. In Nigeria, Colleges of Medicine work in conjunction with University Teaching Hospitals in the training of healthcare professionals. The specialist hospitals are: Neuropsychiatric and Orthopedic. The study was limited to 12 health institutions in Southwestern Nigeria because records from the HINARI team in WHO Geneva showed that they had registered with HINARI prior to the study. The study population consisted of researchers /scientists and clinicians.

### Measures

A standardized, self-administered, 31-item questionnaire was used for data collection. It elicited information on the demographic profile, pattern of usage of HINARI, perceived usefulness and factors influencing utilization of HINARI resources. Prior to its administration, the questionnaire was pre-tested among 12 resident doctors and Faculty at the Ladoke Akintola University Teaching Hospital, Osogbo, Osun state. Those who participated in the pre-test were excluded from the study. This questionnaire was an adaptation of an instrument from a previous study [8].

### Procedure for Data Collection

In order to identify institutions that are eligible to participate in this study, the researchers sent an email to the HINARI Team in Geneva, Switzerland, requesting for a list of all Nigerian institutions that are registered to use the resource. The list showed a total of 105 institutions in the country. All the 12 registered institutions located in Southwest Nigeria were selected for this study. The author(s) visited each of the 12 institutions twice prior to time of data collection in order to collect information about eligible respondents.

Total enumeration technique was used to select the subjects. Ten research assistants were employed and trained for the purpose of data collection. Data were collected by the 10 research assistants under the supervision of the authors. For clinicians, administration of the questionnaire was done during weekly meetings in the seminar rooms. The questionnaire was distributed to all those present during such meetings and the completed ones were collected immediately after the meetings. For other categories of participants, the questionnaire was physically handed over to them or kept in their pigeon holes in the Department. These were later collected by the research assistants.

### Data analysis

All the completed questionnaires were verified in the field for completeness, collated, coded, and fed into the computer and analyzed using the Statistical Package for Social Science (SPSS). Descriptive statistics which include frequency counts, means and simple correlation was used in analyzing the data with Chi-square test.

### Results

#### Demographic profile of respondents

A total of 1805 questionnaires were distributed and 1150 were returned given a response rate of 64%. The list of institutions and number of participants are shown in Table 1. There are more participants from the Colleges of Medicine/University Teaching Hospitals than the other categories of health institutions: COMUI/UCH (29.0%), LASUTH (23.0%) and OAUCHS/OAUTHC (13.2%).

**Table 1:** List of health institutions and number of respondents

Institutions	No	%
College of Medicine /University College Hospital, Ibadan (COMUI & UCH)	334	29.0
Lagos State University and Lagos State University Teaching Hospital, (LASUCOM & LASUTH)	265	23.0
Obafemi Awolowo College of Health Sciences / Teaching Hospital, (OAUCHS/OAUTHC)	152	13.2
College of Medicine / Lagos University Teaching Hospital (CMULAG/LUTH)	101	8.8
Olabisi Onabanjo University College of Health Sciences /Teaching hospital (OOUCH/OOUTH), Sagamu	46	4.0
Ladoke Akintola University College of Medicine / Teaching Hospital (LAUTECH/LAUTH), Osogbo	34	3.0
Federal Medical Center, (FMC), Abeokuta	62	5.4
Federal Medical Center, (FMC), Ebute-Meta, Lagos	38	3.3
Neuropsychiatric Hospital, Aro Abeokuta	24	2.1
Federal Neuropsychiatric Hospital (FNH), Yaba	18	1.6
National Orthopaedic Hospital, (NOH), Igbobi, Lagos	18	1.6
Nigerian Institute of Medical Research (NIMR), Yaba	64	5.6
Total	1,150	100

Table 2 shows the demographic profile of the respondents. There were more males (65.4%) than females (34.6%). A large proportion of the respondents (78.0%) were married. The mean age



of the respondents was 38.2 years, slightly more than half (52.1%) is in the 30-39 age range. The highest professional qualification attained by 42.5% of the respondents is Bachelor of Medicine/ Bachelor of Surgery and Bachelor of Dental Surgery degree. More than half (52.1%) were resident doctors.

Table 2: Demographic profile of the respondents (n=1150)

Demographic Variables	No	%
<i>Sex</i>		
Male	754	65.4
Female	396	34.6
<i>Marital Status</i>		
Single	240	20.9
Married	896	77.9
Others	14	1.2
<i>Age</i>		
20-29	112	9.7
30-39	599	52.1
40-49	314	27.3
50-59	106	9.2
60 and above	19	1.7
Mean age 38.2		
<i>Professional Qualification</i>		
Bachelors Degree	489	42.5
Masters Degree	154	13.4
Fellowship (Professional)	229	19.9
Ph.D/MD	130	11.3
Others	148	12.9
<i>Designation</i>		
Residents	599	52.1
Consultants	223	19.4
Academic staff	178	15.5
Scientists	43	3.7
Researchers	33	2.9
Laboratory Technologists	35	3.0
Medical Officers	15	1.3
House officers	24	2.1

Knowledge about HINARI

Figure 1 shows knowledge of HINARI by respondents. Majority (72.0%) of the respondents claimed they have heard of HINARI. More than half of the respondents (58.3%) got to know about HINARI from their professional colleagues, 24.0% during training programme, 7.5% from the Internet only 5.3% were aware through contact with librarians (Figure 2).

Knowledge of HINARI by selected demographic variables

Knowledge of HINARI by selected demographic variables is shown in Table 3. More males (74.4%) had heard about HINARI than females. Significantly, more consultants (89.2%), Academics (77.5%) and

resident doctors (72.0%) were aware of HINARI than the other categories of respondents. Compared to the other institutions, more respondents from CMUL/LUTH, Lagos (96%), FNH, Yaba, Lagos (83.3%) and FNH, Aro Abeokuta (83.3%) respectively are aware of HINARI.

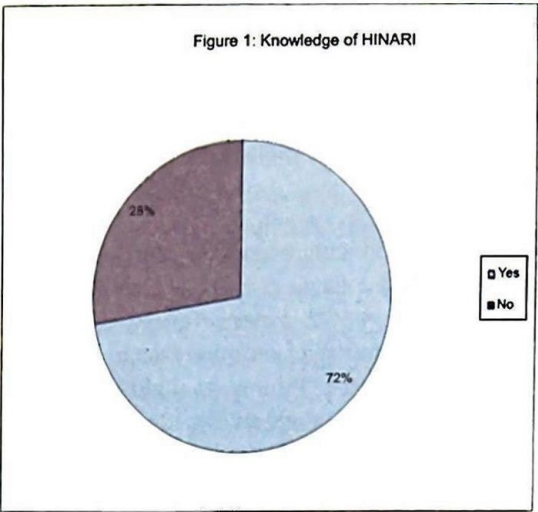


Fig. 1

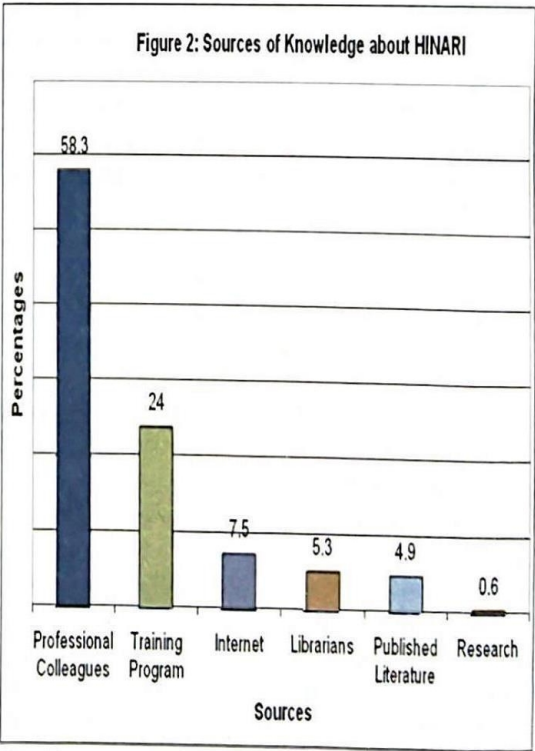


Fig. 2



Table 3: Knowledge of HINARI by selected demographic variables (n=832)

Demographic variables	Knowledge of HINARI				Total
	YES No	%	NO No	%	
<i>Sex</i>					
Males	561	(74.4)	193	(25.6)	754
Female	271	(68.4)	125	(31.6)	396
$X^2=4.22$ $P=0.03$					
<i>Current designation</i>					
Residents	429	(71.6)	170	(28.4)	599
Specialists (Medical consultants)	199	(89.2)	24	(10.8)	223
Academic Staff (faculty)	138	(77.5)	40	(22.5)	178
Scientists	22	(51.2)	21	(48.8)	43
Researchers	16	(48.5)	17	(51.5)	33
House Officers (Interns)	14	(58.3)	10	(41.7)	24
Laboratory scientists	9	(25.7)	26	(74.5)	35
Medical Officers	5	(33.3)	10	(66.7)	15
$X^2=105.20$ $P=0.00$					
<i>Qualification</i>					
Bachelors Degree	313	(64.0)	176	(36.0)	489
Fellowship (professional)	207	(90.4)	22	(9.6)	229
Masters Degree	127	(82.5)	27	(17.5)	154
Ph.D/MD	96	(73.8)	34	(26.2)	130
Others	89	(60.1)	59	(39.9)	148
$X^2=73.34$ $P=0.00$					
<i>Institutional affiliation</i>					
COMUI/UCH	257	(76.9)	77	(23.1)	334
LASUCOM/LASUTH	184	(69.4)	81	(30.6)	265
CHS/OAUTHC	111	(73.0)	41	(27.0)	152
CMUL/LUTH	97	(96.0)	4	(4.0)	101
NIMR-Yaba	47	(73.4)	17	(26.6)	64
FMC-Abeokuta	45	(72.6)	17	(27.4)	62
LAUTH/LAUTCHCO	25	(73.5)	9	(26.5)	34
FNH-Aro, Abeokuta	20	(83.3)	4	(16.7)	24
OOUCOM/OOUTH, Sagamu	18	(39.1)	28	(60.9)	46
FMC-Ebute-Meta, Lagos	10	(26.3)	28	(73.7)	38
FNH-Yaba, Lagos	10	(83.3)	2	(16.7)	12
NOH, Igbobi, Lagos	8	(44.4)	10	(55.6)	18
$X^2=107.89$ $P=0.00$					
Total	932		318		1150

*HINARI usage pattern and access points*

Table 4 shows HINARI usage pattern. Of the 72.0% respondents who are knowledgeable about HINARI, only 35.1% had been trained on how to use the resources. Among those knowledgeable, 67.8% had reportedly used HINARI and 62.4% did so in the month preceding the study. Of those who had ever used HINARI, the majority (76.2%) performed the task of accessing the resources themselves while 23.8% were assisted. HINARI was frequently used in downloading full-text journal articles (55.0%) and searching MEDLINE/PubMed database (53.2%).

Figure 3 shows points of access for HINARI. The key points at which HINARI was accessed were office (77.7%), cyber café (60.6%), Home (58.2%), and Library (41.3%). More than half (53.1%) accessed HINARI from their office the last time they did so. The majority (74.0%) paid Internet access fees out of pocket than those whose institutions are fully responsible for payment.



**Table 4:** HINARI Usage Pattern (n=832)

Variable	No	%
1. Exposure to training in use of HINARI		
Yes	198	35.1
No	366	64.9
2. Had ever used HINARI		
Yes	564	67.8
No	261	32.2
3. Recently used HINARI		
Yes	519	62.4
No	45	37.6
4. Types of HINARI resources used		
i. PubMed/MEDLINE		
Yes	443	53.2
No	707	46.8
ii. Reference materials		
Yes	237	28.5
No	913	71.5
iii. Full-text articles		
Yes	458	55.0
No	692	45.0
iv. Digital resources		
Yes	67	8.0
No	1090	92.0
v. Online books		
Yes	85	10.2
No	1064	89.8

*HINARI usage pattern by selected demographic variables*

HINARI usage pattern by selected demographic variables is shown in Table 5. In comparison to other health institutions, 92.8%, 90.0%, and 88.9% respondents who used HINARI are affiliated to CMUL/LUTH, FNH, Yaba, NOH, Igbobi respectively. More males (71.7%) than females, more respondents (74.7%) within the 50-59 year age brackets and academic staff (82.6%) used HINARI. A greater percentage (92.1%) of respondents who had received previous training used HINARI than those (7.9%) who had not been trained ( $p<0.00$ ).

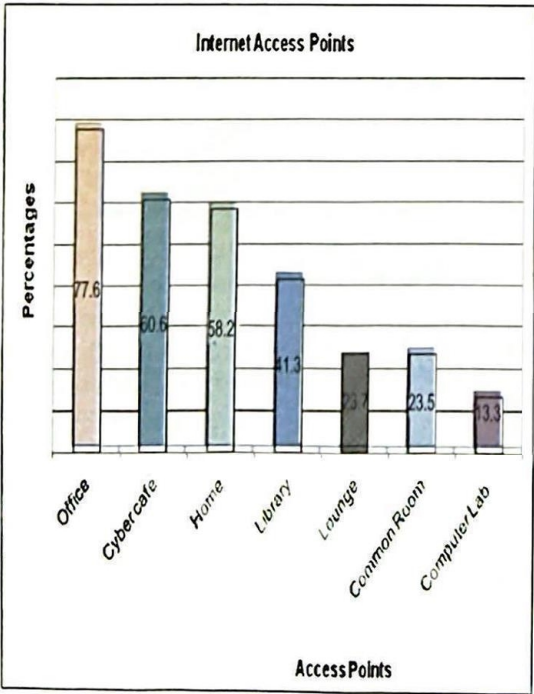
*Constraints to use of HINARI*

All the participants reported that HINARI is of benefit to them. However, 50.0% of respondents who had ever used HINARI reported they encountered problem during the process of usage. The major problem encountered was lack of access to the User Name and Password. Only a few (2.8%) reported the problem encountered to the librarian or officials in their institution. Thirty-two percent respondents suggested that regular training programme be organized for HINARI users (Table 5).

**Discussion**

In this study, a proportion (72.0 %) of the respondents knew about HINARI. This is an encouraging finding because it indicates improvement since an earlier study among postgraduate doctors and researchers in five African countries found that less than half (47.0%) of the respondents have heard of HINARI [10]. A similar study from Uganda reported high level of awareness [11]. However, findings from a study among Sudanese doctors showed that 76% and 57% respondents respectively were not aware of sources of reliable health information including Open Access journals and HINARI [12]. The implication is that more efforts are needed to create greater level of awareness about the existence of HINARI in African countries.

The primary source of knowledge about HINARI is professional colleagues. This is not surprising as previous studies [13-16] showed that health practitioners/clinicians typically prefer to consult with their professional colleagues through interpersonal communication when searching for information to make informed decision to improve practice. By contrast, scientists and researchers tend to rely more on electronic resources [17].



**Fig. 3:** Internet access points



**Table 5:** HINARI usage pattern by demographic characteristics (n=825)

S/N	Demographic Variables	Use of HINARI				Total
		Yes		No		
		Frequency	%	Frequency	%	No
1.	1. COMUI/UCH, Ibadan	190	(76.0)	60	(24.0)	250
	2. CMUL/LUTH, Lagos	90	(92.8)	7	(7.2)	97
	3. LASUCOM/LASUTH, Lagos	88	(48.1)	95	(51.9)	183
	4. OAUSHS/OAUTHC, Ile-Ife	72	(64.9)	39	(35.1)	111
	5. NIMR, Lagos	35	(74.5)	12	(25.5)	47
	6. FMC, Abeokuta	28	(62.2)	17	(37.8)	45
	7. LAUTCHCOM/LTH, Osogbo	18	(72.0)	7	(28.0)	25
	8. FNH, Aro, Abeokuta	14	(70.0)	6	(30.0)	20
	9. FNH, Yaba, Lagos	9	(90.0)	1	(10.0)	10
	10. OOUTH, Sagamu	8	(44.4)	10	(55.6)	18
	11. NOH, Igbobi, Lagos	8	(88.9)	1	(11.1)	9
	12. FMC, Ebute-Meta	4	(40.0)	6	(60.0)	10
	X <sup>2</sup> =83.07      P=0.00					
2.	Age;					
	20-29	13	(25.0)	39	(75.0)	52
	30-39	291	(69.0)	139	(31.0)	422
	40-49	188	(74.3)	65	(25.7)	253
	50-59	65	(74.7)	22	(25.3)	87
	60 and above	7	(63.6)	4	(36.4)	11
X <sup>2</sup> = 51.15      P=0.00						
3.	Sex:					
	Male	400	(71.7)	158	(28.3)	558
	Female	164	(61.4)	103	(38.6)	267
X <sup>2</sup> = 8.32      P=0.00						
4.	Qualification:					
	Bachelors Degree	158	(51.1)	151	(48.9)	309
	Fellowship (National/West Africa)	173	(84.0)	33	(16.0)	206
	Masters Degree	97	(77.6)	28	(22.4)	125
	Ph.D	75	(78.1)	21	(21.9)	89
	Other	61	(68.5)	28	(31.5)	96
X <sup>2</sup> =74.81      P=0.00						
5.	Designation:					
	Resident doctors	263	(62.2)	160	(37.8)	423
	Medical consultants	160	(80.8)	38	(19.2)	198
	Academic staff/ faculty (Non-clinicians)	119	(86.2)	19	(13.8)	138
	Scientists Researchers	18	(56.3)	14	(43.7)	32
	House officers and Medical Officers	4	(40.0)	11	(60.0)	15
X <sup>2</sup> =93.00      P=0.00						
6.	Mode of payment for Internet access					
	1. Institution	179	(64.6)	98	(35.4)	277
	2. Self	308	(74.0)	10	(26.0)	416
X <sup>2</sup> =6.62      P=0.01						
7.	Previous HINARI Training					
	1. Yes	198	(92.1)	17	(7.9)	215
	2. No	366	(60.0)	244	(40.0)	610
	X <sup>2</sup> =74.23      P=0.00					
	Total	564	(72.0)	261	(28.0)	825

Significantly more males knew about HINARI than females. This may be an indication of the fact that males have the time to explore new technologies than females. This finding is consistent

with that of Masters [18] in which more males than females have used the Internet for longer period of time. More consultants (89.3%) and academics (77.5%) are aware of HINARI than other categories



**Table 6:** Constraints to use and suggestions to enhance usage of HINARI resources

S/N	Variables	No	%
1	Had ever encountered any problems with use of HINARI		
	Yes	297	50.0
	No	297	50.0
2	Encountered any problem the last time you used the HINARI		
	Yes	208	70.0
	No	89	30.0
3	Nature of problems encountered .		
	1. Irregular power supply	10	3.2
	2. Authentication problems ( Login/access difficulties)	25	7.9
	3. Technical problems in the HINARI Website	6	1.9
	4. Few African Journals	3	1.0
	5. Slow connection (page takes too long to open)	58	18.4
	6. Password problem (Password not widely distributed within institutions)	213	67.6
4	Suggestion on how to improve usage of HINARI resource		
	1.Organize training workshops	193	31.8
2.	Provide full access to all journals listed	39	6.5
3.	Include more titles of journals and the back issues, more African journals and e-books etc.	175	28.9
4.	Improved infrastructure (power supply, more computers with high speed Internet access)	62	10.2
5.	Others	137	22.6

of the respondents. The possible reason is that academics publish in journals for their career advancement and as such they read journal articles. This may explain why medical specialists, who in most cases are also academics, are more aware of HINARI.

A formal training is required for users to take full advantage of the resources available in HINARI. Unfortunately, only about a third of respondents had ever received formal training on how to access it. The importance of training is also underscored in the data that showed that the majority of those who had received training on HINARI had used it. Lack of training may also explain the limited use of e-books, databases such as PUBMED and other digital resources available in HINARI. The implication of this is that untrained users may not enjoy the full benefit of this resource. Significantly more respondents from Colleges of Medicine /University Teaching Hospitals than those from Specialist Hospitals, Medical centers and the Medical Research institute had used HINARI. The possible explanation may be that respondents in the medical schools/teaching hospitals are involved in teaching, research

and patient care and as such they access HINARI to retrieve journal articles and other relevant materials in order to update their knowledge and carry out their duties effectively and efficiently. This therefore suggests an area of need for training to be conducted by librarians.

A large majority (78%) of the respondents had accessed HINARI from their offices. This finding differs from results of previous studies [8, 9, 19, 20] in which majority of the respondents accessed the Internet from cyber cafes. The transition from use of the cyber café to personalized spaces like home and office is a reflection of the growing affordability of Internet access via USB Modems provided by telecommunication companies which offer dial-up and broad band Internet services. This has enabled many Internet users who normally patronize the cyber cafes to have their own connection to the Internet from the comfort of their offices or homes. This study has shown that lack of Internet access which previously was a major constraint to use of electronic resources is gradually being overcome by those who can afford the subscription fees.



Despite the popularity of MEDLINE/ PubMed; only 38.5% claimed to have accessed it the last time preceding this study. This finding is consistent with previous studies [8, 9, 21, 22] in which use of electronic resources such as databases and portals (HINARI) were found to be underutilized.

Findings of this study also revealed that more specialist /medical consultants (84.0%) than other categories of professionals used HINARI. The possible reason may be that this category of respondents is involved in clinical work, teaching and research as a result they need access to online health information to update their knowledge and keep abreast of development in their specialty. They need information for their research publications in order to advance their careers in their chosen fields hence they tend to use HINARI resources more.

A major barrier to use of HINARI was lack of password. This finding is consistent with that of a previous study by Smith and colleagues [8] where it was reported that administrators/librarians hid the password because they prefer to search for the articles for their clients rather than give the password to them. There are many issues relating to use of password as a means of authentication for access to HINARI. In many of the institutions particularly those that have residency training, new members come in on a regular basis. In institutions where there is no culture of regular training on use of HINARI, and where there is no listserv through which a great majority of staff could be reached by email, it is difficult, to circulate the password to all that needs it. The implication for lack of password is that it will be impossible to access HINARI resources.

## Conclusion

Awareness of HINARI is generally high. However not all respondents who were aware had received formal training on how to use it. Those who use HINARI found the resources to be very useful. Levels of awareness of HINARI lag behind actual use of this resource. The HINARI is not being used optimally because the password is not widely distributed to those who need it in many of the institutions. HINARI is used more for academic purposes than for patient care. There is need for regular training on use of HINARI to enable clients make efficient and effective use of the resources. Librarians should distribute widely the password for HINARI so that every staff can make adequate use of the resources. However, in giving the password librarians need to emphasize the regulations regarding usage to avoid abuse that may result in denial of access to the resource. Institutions should provide

adequate infrastructure (computers with Internet access) to ease the problem of access and increase use of the resources in HINARI

Librarians should organize regular training programme on use of HINARI for students, academic staff, doctors, nurses, and other health care providers in the various institutions. Information literacy including use of HINARI should be made part of the curriculum for medical, nursing students etc and a continuing education course for healthcare providers. There should be regular HINARI training programme for members of faculty. Use of HINARI should be included in the orientation programme for newly employed academic staff.

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