Measures of self-efficacy among healthcare professionals to perform the different tasks involved in conducting the Internet Search

*[1]Dr. Salman Bin Naeem, [2]Prof. Dr. Rubina Bhatti

*[1]**Assistant Professor**, Department of Library and Information Science,
The Islamia University of Bahawalpur, Pakistan. email. salmanbaluch@gmail.com
[2]**Chairperson**, Department of Library and Information Science,
The Islamia University of Bahawalpur, Pakistan. email. dr.rubytariq@gmail.com

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Background

- Health care professionals (HCPs) are encouraged to practice Evidence Based Medicine (EBM) in order to curtail medical errors.
- Evidence Based Medicine includes using the latest evidence or authentic research findings into practice [1]. It requires the ability to recognize the need for information, to be able to identify, access, differentiate, evaluate, store, use and exchange the information needed and to incorporate the information into patient care decisions. In order to do so, it is pre-requisite for HCPs to gain the related skills to perform the required tasks.

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- HCPs who are information literate are able to perform a particular type of action successfully and to persist with it.
- Bandura reported that the advantage of greater self-efficacy is greater confidence in the face of difficulty. The health information on the Internet is rapidly increasing and HCPs can easily feel overwhelmed and have low self-confidence in the searches they perform online to find the required clinical information. Without greater self-efficacy, HCPs who experience different challenges in finding the required information can easily opt to abandon the skills they have. Moreover, self-efficacy is the single most important factor to influence the behavioral change [2].

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- It is evident in the literature that lack of information literacy skills among HCPs is one of the main barriers to their effective use of online healthcare information sources [1,3-6].
- A study conducted in primary healthcare showed that 46% of PCPs "take too much time to find the answer of clinical questions", 46% reported "unsatisfactory past results" in the searches they performed, 68% found it "difficult to articulate questions using an online resource", 66% felt "uncertainty about where to look for information", 57% "did not know how/where to start searching for answers" and 62% of PCPs "did not know how to use online resources very well" [7].

Continues….

- “**Information overload**” was another barrier that prevented HCPs to seek online healthcare information effectively. It is quite difficult for HCPs having low self-efficacy to find the relevant information out of a flood of information [12-14].
- The literature also indicated that “information overload” and “poor information literacy skills” usually lead toward irrelevant information that influence patient care quality.

Objective of the Study

- To measure the ability of healthcare professionals (HCPs) and their perceived level of confidence in performing the different tasks involved in conducting the Internet search in primary and secondary healthcare in Punjab, Pakistan.

Research Design and Methodology

- A cross-sectional survey (2870 PHCs and SHCs)
- 36 District Head Quarters (DHQs)
- 89 Tehsil Headquarter Hospitals (THQs)
- 293 Rural Health Centers (RHCs)
- 2455 Basic Health Units (BHUs)

Population of the Study

- **N=4033**
- 2273 (56.36%) Primary Healthcare
- 1760 (43.64%) Secondary Healthcare

- Physicians,
- Surgeons,
- Gynecologist,
- Pediatricians,
- Anesthetists

Krejcie and Morgan (1970)

APPENDIX B4. Sample Size Calculation Table

Population Size	Confidence = 95% Margin of Error				Confidence = 99% Margin of Error			
	5.0%	3.5%	2.5%	1.0%	5.0%	3.5%	2.5%	1.0%
10	10	10	10	10	10	10	10	10
20	19	20	20	20	19	20	20	20
30	28	29	29	30	29	29	30	30
50	44	47	48	50	47	48	49	50
75	63	69	72	74	67	71	73	75
100	80	89	94	99	87	93	96	99
150	108	126	137	148	122	135	142	149
200	132	160	177	196	154	174	186	198
250	152	190	215	244	182	211	229	246
300	169	217	251	291	207	246	270	295
400	196	265	318	384	250	309	348	391
500	217	306	377	475	285	365	421	485
600	234	340	432	565	315	416	490	579
700	248	370	481	653	341	462	554	672
800	260	396	526	739	363	503	615	763
1,000	278	440	606	906	399	575	727	943
1,200	291	474	674	1067	427	636	827	1119
1,500	306	515	759	1297	460	712	959	1376
2,000	322	563	869	1655	498	808	1141	1785
2,500	333	597	952	1984	524	879	1288	2173
3,500	346	641	1068	2565	558	977	1510	2890
5,000	357	678		3288	586	1066	1734	3842
7,500	365	710	1275	4211	610	1147	1960	5165
10,000	370	727	1332	4899	622	1193	2098	6239
25,000	378	760	1448	6939	646	1285	2399	9972
50,000	381	772	1491	8056	655	1318	2520	12455

Quota Sampling

Determining the proportion of subgroups in the population (N=4033)

Stratum	A	B	C	D
Population size	1668	605	822	938
Proportion of each stratum to population	41%	15%	21%	23%
Sampling proportion	9%	9%	9%	9%
Final sample	150	54	74	84
Proportion of each sampling stratum to total sample size	41%	15%	21%	23%

Stratum A= Basic Health Units (BHUs)
Stratum B= Rural Health Centers (RHCs)
Stratum C= Tehsil Headquarter (THQs)
Stratum D= District Headquarters (DHQs)

Questionnaire

- A set of 11 statements were asked to respondents in order to measure their perceived level of self-efficacy.
- They were asked to make two responses against each statement:

(i) could they perform the task if they wished to? They were asked to list “Y” if they believed they could, and list “N” if they think they could not, in the “CAN DO” column.

(ii) For each task, they were also asked to indicate how confident they feel about their ability to perform the described tasks.

- **Response rate:** Over 2000 phone calls were made to almost 2000 HCPs in order to seek their participation in the survey, of which 1204 HCPs agreed to participate in the study.
- A copy of questionnaire was posted to HCPs who agreed to participate. Of the 1204 HCPs, 396 returned the completed questionnaire with a response rate (32.89 percent), after three follow-up with a gap of two weeks.
- On the other hand, an online link to the questionnaire was sent to 660 HCPs through WhatsApp, out of which 118 responded with a response rate (17.87 percent).
- Overall, the response obtained from HCPs against targeted response from different healthcare facilities was (100 percent).

Results

- **Demographic Information.** Of the 517 (100%) HCPs, majority 351 (67.9%) were male.
- Most of the respondents 199 (38.5%) worked in BHUs, followed by 118 (22.8%) in THQs. The difference in HCPs' gender was much higher in secondary than primary healthcare facilities.
- Using post hoc chi-square analysis, a statistically significant difference with a small effect size was found in the gender distribution of the HCPs in different healthcare facilities such as BHUs, RHCs, THQs, DHQs, and others (χ^2 (4) = 11.141, p = .025, Cramer's V = .147). The most HCPs were in the health facilities of BHUs, the least were in RHCs.

- The age group with the highest number of HCPs was 21–30 years. Majority 103 (38%) of them worked in BHUs. Only 15 (2.9%) were in the age group of 51-60 years.
- Two hundred and seventy two (52.6%) HCPs had less than 5-years of clinical experience, while another 47.4% had a working experience between 6 to 15 > years.

Measures of Self-efficacy			Can Do		Level of Confidence	
Rank	**Statements**	**N**	**Yes**	**No**	**Mean**	**Std. Deviation**
	I can					
1	Determine the appropriate keywords to use in the literature search	396	304 (76.8%)	92 (23.2%)	2.30	.937
2	Identify the major requirements of the search from the initial statement of the topic	397	285 (71.8%)	112 (28.2%)	2.15	.896
3	Develop a search strategy that will identify a large number of appropriate resources	397	229 (57.7%)	168 (42.3%)	2.03	1.027
4	Complete the Internet search competently and effectively	397	232 (58.4%)	165 (41.6%)	1.98	.943
5	Revise a search that will result in a very small percentage of irrelevant items on the list	396	225 (56.8%)	171 (43.2%)	1.96	.966
6	Evaluate the resulting list to monitor the success of my approach	396	223 (56.3%)	173 (43.7%)	1.92	.944
7	Structure my time effectively so that I will finish the search in the allocated time	397	222 (55.9%)	175 (44.1%)	1.88	.929
8	Correctly develop a search to reflect my requirement.	396	214 (54%)	182 (46%)	1.87	.935

Scale: 1= Totally Unconfident, 2= A little Confident, 3= Reasonably Confident, 4= Very Confident, 5= Totally Confident

Measures of Self-efficacy			Can Do		Level of Confidence	
Rank	**Statements**	**N**	**Yes**	**No**	**Mean**	**Std. Deviation**
	I can					
9	Use guidelines effectively when developing my search strategy	397	204 (51.4%)	193 (48.6%)	1.85	.959
10	Perform a search that will result in at least twenty valid references on the stipulated topic	397	186 (46.9%)	211 (53.1%)	1.67	.813
11	Use connecting terms like "and", "or' and "not" when designing a search statement	397	186 (46.9%)	211 (53.1%)	1.66	.788

Scale: 1= Totally Unconfident, 2= A little Confident, 3= Reasonably Confident, 4= Very Confident, 5= Totally Confident

Measures of Self-efficacy		Can Do			Perceived Level of Ability among HCPs of different Healthcare Facilities		
Rank	Statements	N	Yes	No	χ^2 value	*p-value*	Cramer's V
	I can						
1	Determine the appropriate keywords to use in the literature search	396	304 (76.8%)	92 (23.2%)	21.507	.000*	.233
2	Identify the major requirements of the search from the initial statement of the topic	397	285 (71.8%)	112 (28.2%)	18.274	.001*	. .215
3	Develop a search strategy that will identify a large number of appropriate resources	397	229 (57.7%)	168 (42.3%)	12.488	.014*	.177
4	Complete the Internet search competently and effectively	397	232 (58.4%)	165 (41.6%)	16.329	.003*	.203
5	Revise a search that will result in a very small percentage of irrelevant items on the list	396	225 (56.8%)	171 (43.2%)	12.833	.012*	.180
6	Evaluate the resulting list to monitor the success of my approach	396	223 (56.3%)	173 (43.7%)	16.573	.002*	.205
7	Structure my time effectively so that I will finish the search in the allocated time	397	222 (55.9%)	175 (44.1%)	19.382	.001*	.221
8	Correctly develop a search to reflect my requirement.	396	214 (54%)	182 (46%)	15.832	.003*	.200

Measures of Self-efficacy			Can Do		Perceived Level of Ability among HCPs of different Healthcare Facilities		
Rank	Statements	N	Yes	No	χ^2 value	*p-value*	Cramer's V
	I can						
9	Use guidelines effectively when developing my search strategy	397	204 (51.4%)	193 (48.6%)	8.807	.006*	.149
10	Perform a search that will result in at least twenty valid references on the stipulated topic	397	186 (46.9%)	211 (53.1%)	10.844	.028*	.165
11	Use connecting terms like "and", "or' and "not" when designing a search statement	397	186 (46.9%)	211 (53.1%)	13.829	.008*	.187

HCPs' Age and their Perceived Ability to Perform the Different Tasks Involved in Conducting the Internet Search (Measures of Self-efficacy)

Rank	Statements	χ^2 value	*p-value*	Cramer's *V*
1	Determine the appropriate keywords to use in the literature search	51.988	.000*	.362
2	Identify the major requirements of the search from the initial statement of the topic	39.672	.000*	.316
3	Develop a search strategy that will identify a large number of appropriate resources	37.012	.000*	.305
4	Complete the Internet search competently and effectively	35.885	.000*	.301
5	Revise a search that will result in a very small percentage of irrelevant items on the list	30.029	.000*	.275
6	Evaluate the resulting list to monitor the success of my approach	33.577	.000*	.291
7	Structure my time effectively so that I will finish the search in the allocated time	29.567	.000*	.273
8	Correctly develop a search to reflect my requirement.	27.080	.000*	.262
9	Use guidelines effectively when developing my search strategy	25.502	.000*	.253
10	Perform a search that will result in at least twenty valid references on the stipulated topic	22.763	.000*	.239
11	Use connecting terms like "and", "or' and "not" when designing a search statement	19.405	.000*	.221

*The difference is significant at the 0.05 level.
Chi-square statistics. Grouping variable: Age Group (21-30 years, 31-40 years, 41-50 years, 51-60 years).
df = 3

- HCPs in the age group 21-30 years perceived the greater ability to perform the different tasks involved in conducting the Internet search as compared to HCPs of older age groups.

HCPs' Working Experience and their Perceived Ability to Perform the Different Tasks Involved in Conducting the Internet Search (Measures of Self-efficacy)

Rank	Statements	χ^2 value	*p-value*	Cramer's V
1	Determine the appropriate keywords to use in the literature search	54.151	.000*	.370
2	Identify the major requirements of the search from the initial statement of the topic	40.179	.000*	.318
3	Develop a search strategy that will identify a large number of appropriate resources	34.978	.000*	.297
4	Complete the Internet search competently and effectively	36.607	.000*	.304
5	Revise a search that will result in a very small percentage of irrelevant items on the list	30.869	.000*	.279
6	Evaluate the resulting list to monitor the success of my approach	32.404	.000*	.286
7	Structure my time effectively so that I will finish the search in the allocated time	29.149	.000*	.271
8	Correctly develop a search to reflect my requirement.	29.098	.000*	.271
9	Use guidelines effectively when developing my search strategy	27.088	.000*	.261
10	Perform a search that will result in at least twenty valid references on the stipulated topic	23.057	.000*	.241
11	Use connecting terms like "and", "or' and "not" when designing a search statement	20.154	.000*	.225

*The difference is significant at the 0.05 level.

Chi-square statistics. Grouping variable: Working experience (< 5 years, 6-10 years, 11-15 years, 15 > years).

df = 3

- HCPs in a group of least clinical experience < 5-years perceived the greater ability to perform the different tasks involved in conducting the Internet search as compared to HCPs of greater clinical experience groups.

Perceived Level of Confidence among HCPs of different Healthcare Facilities

Sr. No	Statements	Mean Rank					χ^2 value	*p-value*
		BHUs	RHCs	THQs	DHQs	Others		
1	Determine the appropriate keywords to use in the literature search	179.01	183.46	226.85	232.24	133.11	28.090	.000*
2	Identify the major requirements of the search from the initial statement of the topic	186.04	184.51	215.43	231.24	132.13	21.086	.000*
3	Use connecting terms like "and", "or" and "Not" when designing a search statement	187.27	175.27	213.94	224.54	165.41	13.763	.008*
4	Correctly develop a search to reflect my requirement.	185.07	178.60	212.46	232.26	158.35	17.165	.002*
5	Evaluate the resulting list to monitor the success of my approach	183.16	181.06	211.56	235.75	156.61	19.241	.001*
6	Develop a search strategy that will identify a large number of appropriate resources	189.05	179.10	209.98	224.09	170.65	9.917	.042*
7	Perform a search that will result in at least twenty valid references on the stipulated topic	187.12	187.41	209.62	221.76	176.50	8.625	.071
8	Revise a search that will result in a very small percentage of irrelevant items on the list	185.79	170.17	208.19	233.43	173.25	16.191	.003*
9	Use guidelines effectively when developing my search strategy	186.65	190.40	206.77	216.32	196.35	5.097	.278
10	Complete the Internet search competently and effectively	186.34	176.10	213.68	225.55	175.09	12.056	.017*
11	Structure my time effectively so that I will finish the search in the allocated time	181.02	171.11	215.86	233.20	183.96	18.633	.001*

*The difference is significant at the 0.05 level.

Kruskal–Wallis test. Grouping variable: Healthcare Facility (Basic Healthcare Units (BHUs), Rural Health Centers (RHCs), Tehsil Headquarters (THQs), District Head Quarters (DHQs), Others.

df =

Conclusion

- The majority of the HCPs were able to perform the different tasks involved in conducting the Internet search. However, they had very little confidence in their ability to perform these tasks.

Recommendations

- The results of the study recommended a need to provide trainings on effective information skills through information literacy programs such as hands on training on information searching, retrieving and incorporating the latest information into patient care decisions at each district level with CME credits, in order to increase the awareness, knowledge, skills and level of confidence among HCPs to perform the different tasks involved in conducting the Internet search. It will help HCPs to make informed patient care decisions that will ultimately improve the community health outcomes.

References

1. Deshpande N, Publicover M, Gee H, Khan KS. Incorporating the views of obstetric clinicians in implementing evidence-supported labour and delivery suite ward rounds: a case study. Health Information & Libraries Journal. 2003 Jun 1;20(2):86-94.

2. Bandura A. Self-efficacy: The exercise of control. Macmillan; 1997 Feb 15.

3. Torre DM, Wright SM, Wilson RF, Diener-West M, Bass EB. Family physicians' interests in special features of electronic publication. Journal of the Medical Library Association. 2003 Jul;91(3):337.

4. Bryant SL. The information needs and information seeking behaviour of family doctors. Health Information & Libraries Journal. 2004 Jun 1;21(2):84-93.

5. Dorsey MJ, Detlefsen E. Investigating information-seeking behaviors of primary care physicians who care for older depressed patients and their family caregivers: a pilot study. Journal of the Canadian Health Libraries Association/Journal de l'Association des bibliothèques de la santé du Canada. 2005 Dec 1;26(4):111-6.

6. Coumou HC, Meijman FJ. How do primary care physicians seek answers to clinical questions? A literature review IRP. Journal of the Medical Library Association. 2006 Jan 1;94(1):55.

7. Naeem SB, Bhatti R. Barriers in seeking health information from primary healthcare facilities in Pakistan. Information Development. 2016 Sep;32(4):1014-26.

8. Meats E, Brassey J, Heneghan C, Glasziou P. Using the Turning Research Into Practice (TRIP) database: how do clinicians really search?. Journal of the Medical Library Association. 2007 Apr 1;95(2):156.

9. Laki DG. *Factors influencing health information-seeking behavior among health care providers in Tanga region, Tanzania: a case study of MUHEF project* (Doctoral dissertation, Muhimbili University of Health and Allied Sciences).

10. Ely JW, Osheroff JA, Ebell MH, Chambliss ML, Vinson DC, Stevermer JJ, Pifer EA. Obstacles to answering doctors' questions about patient care with evidence: qualitative study. Bmj. 2002 Mar 23;324(7339):710.

11. D'Alessandro DM, Kreiter CD, Peterson MW. An evaluation of information-seeking behaviors of general pediatricians. Pediatrics. 2004 Jan 1;113(1):64-9.

12. Bennett NL, Casebeer LL, Kristofco RE, Strasser SM. Physicians' Internet information-seeking behaviors. Journal of Continuing Education in the Health Professions. 2004 Dec 1;24(1):31-8.

13. Hall A, Walton G. Information overload within the health care system: a literature review. Health Information & Libraries Journal. 2004 Jun 1;21(2):102-8.

14. Davies K. The information-seeking behaviour of doctors: a review of the evidence. Health Information & Libraries Journal. 2007 Jun 1;24(2):78-94.

15. Krejcie RV, Morgan DW. Determining sample size for research activities. Educational and psychological measurement. 1970 Sep;30(3):607-10.

16. Strasser TC. The information needs of practicing physicians in northeastern New York State. Bulletin of the Medical Library Association. 1978 Apr;66(2):200.

17. Gillikin P, Price L, Lee S, Sprinkle MD, Leist JC. A self-supporting library service in a rural region: a new look at hospital consortia. Bulletin of the Medical Library Association. 1982 Apr;70(2):216.

18. Cooper JK, Cooper D, Johnson TP. Medical library support in rural areas. Bulletin of the Medical Library Association. 1983 Jan;71(1):13.

19. Jensen MA, Sisco AL, Maddalena BE. Implications of an AHEC library program evaluation: considerations for small rural hospitals. Bulletin of the Medical Library Association. 1985 Jan;73(1):59.

20. Dee C, Blazek R. Information needs of the rural physician: a descriptive study. Bulletin of the Medical Library Association. 1993 Jul;81(3):259.

21. Fehrmann P, Thomas J. Comprehensive computer searches and reporting in systematic reviews. Research Synthesis Methods. 2011 Mar 1;2(1):15-32.

22. Lokker C, Haynes RB, Wilczynski NL, McKibbon K, Walter SD. Retrieval of diagnostic and treatment studies for clinical use through PubMed and PubMed's Clinical Queries filters. Journal of the American Medical Informatics Association. 2011 Sep 1;18(5):652-9.

23. Booth A. In search of the information literacy training 'half-life'. Health Information & Libraries Journal. 2007 Jun 1;24(2):145-9.


Thank You