RESEARCH ARTICLE

FUNCTIONAL HEALTH LITERACY AMONG HEALTHCARE PROFESSIONALS IN PAKISTAN: THE MISSING LINK

[1,*]Madeeha Malik, [2]Azhar Hussain and [3]Syeda Rubab Zehra Zaidi

[1]Vice President, Pakistan Society of Pharmacy Practice, Professor, Hamdard Institute of Pharmaceutical Sciences, Hamdard University, Islamabad Campus
[2]Hamdard Institute of Pharmaceutical Sciences, Hamdard University, Islamabad Campus
[3]President, Pakistan Society of Pharmacy Practice, Professor, Dean, Faculty of Pharmacy, Hamdard University, Islamabad Campus

ARTICLE INFO

ABSTRACT

Study Objective: The objective of the present study was to measure the functional health literacy among healthcare professionals in twin cities of Pakistan. **Design:** A descriptive cross-sectional study design was used. **Setting:** Tertiary care hospitals, private clinics and pharmacies located in Islamabad and Rawalpindi. **Method:** A pre-validated tool named S-TOFHLA was utilized and distributed to a sample of 382 physicians, 236 pharmacists and 382 nurses selected by convenient sampling technique. After data collection, data was coded and analyzed statistically. **Results:** The results showed that functional health literacy level of pharmacists was adequate i.e. they could correctly read and interpret health texts (27.17, ±5.65) and also they had the highest score among the three healthcare professionals. Physicians functional health literacy level was also adequate (26.76, ±7.42) while nurses possessed marginal functional health literacy (17.07, ±7.24). **Conclusion:** The present study concluded that both the physicians and pharmacists had adequate functional health literacy level while nurses had marginal functional health literacy. Young healthcare professionals had better functional health literacy than older healthcare professionals.

INTRODUCTION

Health literacy, an important component of health promotion interventions, is defined as "the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions" (Ennis *et al*., 2012). The concept of health literacy is essential in healthcare as literature has revealed that low levels of health literacy are related to poor health outcomes. Low levels of functional health literacy i.e. inability to read health related information, is known to be associated with poor health status; lower levels of screening and medication adherence rates as well as increased hospitalizations and subsequent increased healthcare costs (Bostock and Steptoe, 2012; Adams *et al*., 2009; Baker *et al*., 2002). Healthcare professionals serve as the main source for provision of health related information to patients and their caregivers. It has been suggested by various organizations to introduce training on health literacy in the medical curriculum. Training of healthcare professionals in identification and counseling of health illiterate patients have resulted in better outcomes. Untrained professionals create barriers for such patients through use of difficult medical terminologies and instructions and ineffective counseling techniques (Saunders *et al*., 2018).

*Corresponding author: **Madeeha Malik,**
Vice President, Pakistan Society of Pharmacy Practice, Professor, Hamdard Institute of Pharmaceutical Sciences, Hamdard University, Islamabad Campus.

The subject of health is not given priority in developing countries especially Pakistan. There is lack of infrastructure and resources for delivering quality health to the population. Poor hospitals' management, mishandling of medical emergencies, incompetent healthcare professionals, lack of medical training programs are few of the factors affecting quality of services provided by the healthcare system in Pakistan. The role of healthcare professionals in Pakistan does not meet the international standard requirements. The three main healthcare professionals i.e. physicians, pharmacists and nurses work in isolation rather than showing teamwork towards delivering quality health care to patients. Moreover, having inadequate knowledge of their respective fields, reluctant behavior towards acceptance of their role and possessing accountability issues are few of the other reasons behind the incompetency of healthcare professionals in Pakistan. Reforms need to be implemented and interventions need to be executed for bringing radical improvements in Pakistan's healthcare system promising delivery of quality health services to the Pakistani community (Zafar *et al*., 2008). Less evidence is available on assessing the functional health literacy which is increasing the burden of diseases, co-morbidities and mortalities. Evidence supports the assessment of health literacy among general community but not in healthcare professionals. Therefore, the aim of the present study was to aseess functional health literacy among healthcare professionals in twin cities (Islamabad and Rawalpindi) of Pakistan.

MATERIALS AND METHODS

Study Design, Population and Setting: A descriptive cross-sectional study design was used. Study population included physicians, pharmacists and nurses. Study site for this research included all tertiary care hospitals, private clinics and pharmacies located in Islamabad and Rawalpindi.

Research Ethics: National bioethical committee is present for this type of research and it states that only institutional head approval is required for this type of study (www.pmrc.org.pk/erc_guidelines.htm, 2011). Beside this approval was obtained for the study from the Ethical Committee of Hamdard University (Ref 161). Moreover in Pakistan, questionnaire-based studies do not need any endorsement from Ministry of Health. Despite that, prior information was sent to the Ministry of Health, Government of Pakistan for the execution of this research. For data collection approval from MS of the hospitals was taken. Informed and verbal consent for participation was also taken from the respondents. Respondents were ensured for the confidentiality of information verbally as well as confidentiality under taking was signed by the principal investigator.

Sampling Procedure and Sample Size: Convenient sampling technique was used to select the respondents who were available at the time of data collection and were willing to participate in the study. Calculations of sample size were performed using Raosoft sample size calculator to determine size of sample representing population of physicians, pharmacists and nurses. Sample size has been calculated as 382 for each group to achieve 95% confidence interval with 5% margin of error. Total sample size for collection of data had to be 1146 but due to unavailability of pharmacists at their workplace (hospital and community pharmacies) at the time of data collection, only 236 pharmacists took part in the study. Thus, the data was collected from a total sample of 1000 respondents (382 physicians, 236 pharmacists and 382 nurses). The response rate for the study was: physicians 100 %, pharmacists 61 % and nurses 100 %. The overall response rate for the study was 87 %.

Data Collection Tool: Short Test of Functional Health Literacy in Adults (S-TOFHLA) was the tool used for data collection. A pre-validated tool named S-TOFHLA was used to assess the functional health literacy among healthcare professionals. S-TOFHLA (Reading Comprehension) tests a person's ability to read materials from the health care setting. It comprises of 2 functional health reading comprehension passages. Passage A is regarding X-ray preparation and passage B is about Medicaid rights and responsibilities. The passages are ordered by increasing difficulty. This is a timed test and should be stopped at the end of 7 minutes. Test comprises of 36 blanks (16 blanks in passage A, 20 blanks in passage B) to be filled by the most appropriate word among the 4 options given below each blank. Scoring of tool is done by comparing the answers with the appropriate scoring key provided. In the score box, "1" was circled for correct and "0" for incorrect for each blank. Correct answers were summed for each page and total was recorded on the last scoring column page as the Reading Comprehension Raw Score and then it was seen that the score lies in which of the mentioned ranges given in the TOFHLA Functional Health Literacy Levels (Table 1). The tool S-TOFHLA used for research was a pre-validated tool. Reliability of the tool was tested through pilot testing at 10% of sample size and the Cronbach Alpha Value was found to be 0.92 which is satisfactory as it falls in the acceptable range for the tool to be considered reliable.

Data Collection: Data was collected by principal investigator trained by supervisor. The respondents were identified and after obtaining verbal and written consent from them, questionnaire was hand-delivered to them. Questionnaire was collected back after 7 minutes to avoid study biasness.

Data Analysis: After data collection, data was clean-coded and entered in SPSS version 21.Skewness test was performed and histograms with normal curves were used to check normal distribution of data. Descriptive statistics comprising of frequency and percentage were calculated. Kruskal Wallis and Mann-Whitney tests ($p \geq 0.005$) were performed to find out the difference among different variables.

RESULTS

Demographic Characteristics: Of the total 1000 respondents, 38.2% (n=382) were physicians, 23.6% (n=236) were pharmacists and 38.2% (n=382) were nurse. Out of 1000 respondents, 47.2% (n=472) were men while 52.8% (n=528) were women. Of the total 1000 respondents, 43% (n=434) were working in public sector while 56.6% (n=566) were working in private sector. Regarding the experience of respondents, 43.7% (n=437) had working experience of less than one year, 46.3% (n=463) had working experience of 1-5 years, 7.5% (n=75) had an experience of 6-10 years while2.5 % (n=25) had working experience of greater than 10 years. A detailed description is given (Table 2).

Comparison of Mean Scores of Functional Health Literacy of Healthcare Professionals: The mean composite scores of functional health literacy among different healthcare professionals were: physicians (26.76, ±7.42), pharmacists (27.17, ±5.65) and nurses (17.07, ±7.24). A detailed description is given in (Table 3).

Comparison of Mean Scores of Functional Health Literacy of Healthcare Professionals according to Demographics: Significant difference (p= 0.003) was found in the functional health literacy level among different healthcare professionals (physicians, pharmacists and nurses). Nurses' score was the lowest among the three healthcare professionals. Physicians had better score but comparatively lower than pharmacists. Pharmacists had the highest mean rank value. Moreover, Significant differences were found in the functional health literacy level among different age groups (p= 0.001), sectors of practice (p= 0.001)and levels of experience (p= 0.002)of healthcare professionals. Healthcare professionals falling in the age group between 30-39 years, healthcare professionals working in private sector and healthcare professionals having 1-5 years of experience had the lowest functional health literacy scores. Moreover, no significant difference (p≤0.05) was found among different genders, marital status and monthly income levels of healthcare professionals. Detailed description is given (Table 4).

DISCUSSION

Adequate level of health literacy is necessary for understanding complex medical vocabulary, easy communication with health care providers, active participation

Table 1. TOFHLA functional health literacy levels

Levels	TOFHLA Score	Functional Health Literacy Description
Inadequate Functional Health Literacy	0-16	Unable to read and interpret health texts
Marginal Functional Health Literacy	17-22	Has difficulty reading and interpreting health texts
Adequate Functional Health Literacy	23-36	Can read and interpret most health texts

Table 2. Demographic Characteristics

Indicator		n (%)
Age	20-29Y	852 (85.2)
	30-39Y	111 (11.1)
	40-49Y	37 (3.7)
Gender	Male	472 (47.2)
	Female	528 (52.8)
Marital status	Married	258 (25.8)
	Unmarried	742 (74.2)
Profession	Physician	382 (38.2)
	Pharmacist	236 (23.6)
	Nurse	382 (38.2)
Sector of practice	Public	433 (43.3)
	Private	567 (56.7)
Level of experience	<1 year	437 (43.7)
	1-5 years	463 (46.3)
	6-10 years	75 (7.5)
	>10 years	25 (2.5)
Monthly income	Rs.10,000-20,000	395 (39.5)
	Rs.21,000-30,000	192 (19.2)
	Rs.31,000-50,000	271 (27.1)
	>Rs.50,000	142 (14.2)

Table 3. Comparison of Mean Scores of Functional Health Literacy of Healthcare Professionals

Functional Health Literacy	Physician				Pharmacist				Nurse			
	Mean	S.D	Median	IQR	Mean	S.D	Median	IQR	Mean	S.D	Median	IQR
Passage A: X-ray Preparation	13.8325	2.966	15	3	14.114	2.421	15	2	9.439	3.987	10	7
Passage B: Medical Rights and Responsibilites	12.934	5.543	14	9	13.0508	4.825	14	7.75	7.6335	4.938	7	6
Composite	26.767	7.425	28	11	27.165	5.654	27	9	17.073	7.24	17	11
Description of Score	Adequate Functional Health Literacy				Adequate Functional Health Literacy				Marginal Functional Health Literacy			

Table 4. Comparison of mean scores of functional health literacy of healthcare professionals according to demographics

Variable	Functional Health Literacy			
	n	Mean Rank	Test Statistics	P-value
Gender				
Male	472	487.87	1.186[a]	0.091
Female	528	511.79		
Sector of Practice	433	556.62	98023[a]	0.001
Public	567	459.69		
Private				
Marital Status				
Married	258	477.76	89850[a]	.076
Unmarried	742	508.41		
Age (years)	852	523.54	37.647[b]	0.001
20-29	111	354.44		
30-39	37	408.19		
40-49				
Experience (years)			21.835[b]	0.002
< 1	437	547.79		
1–5	462	459.6		
6–10	75	471.05		
> 10	25	498.18		
Profession			320.404[b]	0.003
Physician	382	627.62		
Pharmacist	236	631.06		
Nurse	382	292.72		
Monthly Income (Rs.)				
10,000-20,000	395	495.95	5.235[b]	0.154
21,000-30,000	192	472.11		
31,000-50,000	271	531.65		
> 50,000	142	492.08		

a.Mann–Whitney test; b.Kruskal–Wallis test (p ≥ 0.005)

in self care and taking sound decisions for spending a healthy life (Evangelista *et al*., 2010). Literature provides substantial evidence regarding serious consequences of having limited health literacy including increased number of outpatient visits, lack of screening tests and immunization awareness, less utilization of preventive measures, poor adherence to therapy, development of chronic diseases and poor health status (DeWalt *et al*., 2004; Mitchell *et al*., 2012). The result of the present study showed significant association between different healthcare professional and their functional health literacy level. The general understanding of X-ray preparation and medical rights and responsibilities was comparatively higher in pharmacists than physicians and nurses. Both physicians and pharmacists had adequate health literacy level while nurses had marginal health literacy.

This might be due to the fact that nurses had difficulty in reading and interpreting health texts due to English language barrier. Another study conducted in San Francisco also reported English proficiency as a barrier for being health literate (Wilson *et al*., 2005). Evidence from another study conducted in Karachi also reported health related knowledge not at optimum level among healthcare Professionals especially in nurses (Ahmed *et al*., 2006).(Kaas *et al*., 2016). The result of the present study also reported that significant difference was present between age and functional health literacy level of healthcare professionals. Young healthcare professionals had better health literacy. This might be due to the fact that older age is associated with lower TOFHLA scores as cognitive functions decline with age (Barber *et al*., 2009). Moreover, cognitive processes like adequate vision, concentration, word recognition, working memory, and information processing; all together influence reading ability making difficult to understand health related information (Baker *et al*., 2000).

The results of the current study also reported significant associations between sector of practice and functional health literacy level of healthcare professionals. Those working in public sector had better functional health literacy level than those working in private sector. This might be explained by the fact that most of the appointments of healthcare professionals in public sector are based on tough criteria. Moreover, results also reported significant association between level of experience and functional health literacy level. Those having less than one year of work experience had better functional health literacy level than more experienced ones, probably due to the fact of being freshly graduated and enthusiastic to work effectively in delivering patient care. Limited data is available regarding status of health literacy among healthcare professionals. Extensive research is required to address this serious concern as healthcare professionals contribute significantly towards improving health literacy of the general public.

Conclusion

The present study concluded that among the three main healthcare professionals involved directly in patient care, the pharmacists and physicians possessed adequate functional health literacy while marginal functional health literacy was found among nurses. Both the pharmacists and physicians can easily read and interpret most health texts while nurses face difficulty in reading and interpreting health texts. This puts a question mark on the quality of education provided in the nursing schools in Pakistan. Effective strategies are required to be designed to train healthcare professionals as being the central part in the process of health information dissemination to patients and general community. Healthcare professionals possess a huge responsibility of counseling and educating the patients in the right way to ensure good compliance to therapy

and empowering them to take appropriate health related decisions for achieving their desired health outcomes.

Study Limitation

The study has been carried out in twin cities of Pakistan. Thus, the results cannot be generalized to the whole country. Time and financial constraints were few of the limitations of the study. Availability of hospital and community pharmacist was another challenge faced during data collection.

Recommendation

As limited health literacy is a major concern worldwide, it is recommended that medical institutions of Pakistan improve their quality of education provided to students and incorporate sense of responsibility in them especially in nursing schools. Special attention should be given to the level of education in nursing institutions as nurses are the direct care providers to the patient. Policies need to be made at national level for addressing this issue. Interventions need to be planned at educational, managerial and regulatory level in order to improve the quality of health education for students and also for continuous education programs and training sessions for healthcare professionals. Although the current situation of pharmacists in Pakistan is not very favorable because of the minimum recognition of their role in health care system which needs to be accepted in order to play their role effectively in health care delivery.

REFERENCES

Adams RJ., Appleton SL., Hill CL., *Et al*., 2009. Risks Associated With Low Functional Health Literacy In An Australian Population. *Med J Aust.,* 191(10): 530-534.

Ahmed F., Mahmud S., Hatcher J., *et al*., 2006. Breast Cancer Risk Factor Knowledge Among Nurses In Teaching Hospitals Of Karachi, Pakistan: A Cross-Sectional Study. *BMC Nursing* 5(1): 1.

Baker DW., Gazmararian JA., Sudano J., *et al*., 2000. The Association Between Age And Health Literacy Among Elderly Persons. *The Journals Of Gerontology Series B: Psychological Sciences And Social Sciences* 55(6): S368-S374.

Baker DW., Gazmararian JA., Williams MV., *et al*., 2002. Functional Health Literacy and The Risk Of Hospital Admission Among Medicare Managed Care Enrollees. *American Journal Of Public Health* 92(8): 1278-1283.

Barber MN., Staples M., Osborne RH., *et al*., 2009. Up To A Quarter Of The Australian Population May Have Suboptimal Health Literacy Depending Upon The Measurement Tool: Results From A Population-Based Survey. *Health Promotion International* 24(3): 252-261.

Bostock S. and Steptoe A. 2012. Association Between Low Functional Health Literacy And Mortality In Older Adults: Longitudinal Cohort Study. *Bmj* 344: E1602.

Dewalt DA., Berkman ND., Sheridan S., *et al*., 2004. Literacy And Health Outcomes. *Journal of General Internal Medicine* 19(12): 1228-1239.

Ennis K., Hawthorne K. and Frownfelter D. 2012. How Physical Therapists Can Strategically Effect Health Outcomes For Older Adults With Limited Health Literacy. *Journal of Geriatric Physical Therapy* 35(3): 148-154.

Evangelista LS., Rasmusson KD., Laramee AS., *et al*., 2010. Health Literacy And The Patient With Heart Failure—Implications For Patient Care And Research: A Consensus Statement Of The Heart Failure Society Of America. *Journal of Cardiac Failure* 16(1): 9-16.

Kaas J., Stasková V. and Šulistová R. 2016. The Concept Of Health Literacy In Contemporary Nursing. *Kontakt* 18(4): E219-E223.

Mitchell SE., Sadikova E., Jack BW., *et al*. 2012. Health Literacy And 30-Day Postdischarge Hospital Utilization. *Journal of Health Communication* 17(Sup3): 325-338.

Saunders C., Palesy D. and Lewis J. 2018. Systematic Review And Conceptual Framework For Health Literacy Training In Health Professions Education. *Health Professions Education*.

Wilson E., Chen AH., Grumbach K., *et al*. 2005. Effects Of Limited English Proficiency And Physician Language On Health Care Comprehension. *Journal of General Internal Medicine* 20(9): 800-806.

Zafar SN., Gowani SA., Irani FA., *et al*., 2008. Awareness Of The Risk Factors, Presenting Features And Complications Of Hypertension Amongst Hypertensives And Normotensives. *J Pak Med Assoc* 58(12): 711-715.

Www.Pmrc.Org.Pk/Erc_Guidelines.Htm. 2011. National Bioethics Committee Pakistan [Online]. Ethical Research Committee Guideline. Available: Http://Www. Pmrc.Org. Pk/Erc_Guidelines.Htm. [Accessed].

****