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Health Literacy a Public Health Challenge for Asthma Control in Pakistan

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Abstract

Objective: The present study was designed to measure functional health literacy among asthmatic patients in Pakistan.

Method: A descriptive cross-sectional study design was used to assess health literacy among asthmatic patients in twin cities of Pakistan. A pre-validated data collection tool S-TOFHLA (short test of functional health literacy in adults) was distributed to a sample of 382 asthmatic patients selected by convenience sampling technique. After data collection, data was cleaned coded and entered in SPSS 21. Chi-square test ($p \geq 0.05$) was performed to find out the association among different variables.

Results: The correct knowledge of health literacy regarding different parameters of x-ray preparation among asthmatic patients was: x-ray purpose (n=345, 90.3%), instruction before x-ray (n=381, 99.7%), timing of x-ray (n=382, 100%) & diet plan before x-ray (n=382, 100%). Significant association ($p \geq 0.05$) among health literacy and different demographics such as age, gender, qualification, duration of diagnosis and income level in asthmatic patients was observed.

Conclusion: The present study concluded that asthmatic patients had marginal functional health literacy. They had difficulty reading, understanding, and interpreting most health materials. They were likely to take their medications incorrectly or failing to take prescribed diets or treatment regimens.

Practice Implications: Healthcare facilities of Pakistan must improve their quality of health education provided to asthmatic patients and incorporate sense of responsibility of patient counseling among physicians.

Keywords: Asthma; Health literacy; Marginal; Pakistan

Highlights

- Asthmatic patients had marginal functional health literacy in Pakistan.
- Patients had difficulty in reading, understanding, and interpreting most health materials.
- Patients were incorrectly or failing to take prescribed diets or treatment regimens.

Introduction

Asthma is a chronic illness categorized by common breathing complications and symptoms including breathlessness, wheezing, chest tightness and coughing [1]. Approximately 334 million people have been reported by bronchial asthma during 2008-2010. Health literacy is termed as "the degree to which people have the potential to acquire, manage and recognize primary health statistics and offerings needed to make suitable health decisions" [2]. There is a strong link between inadequate health literacy and suboptimal asthma management. Adequate health literacy helps asthmatic patients anticipate bronchial asthma self-management and personal self-care [3]. Although, various factors have been recognized in poor management of asthma but various socio-demographic variables including age, setting of residence and education have been identified to be potentially addressed inside the health care setting for improving health literacy. Nationwide bronchial asthma prevention programs can help the patients to acquire adequate health literacy and self-control skills to manage their disease [2]. About 34 million people in America have been recognized suffering with bronchial asthma during their lifetimes. Asthma increases health care fees, reduces productiveness, increased school and work absenteeism and decreases the quality of life of affected person and their households [4]. Limited health literacy regarding asthma management has been identified as major public health problem among urban as well as minority groups

living in America [5]. A study conducted in Switzerland assessing effects of health literacy, judgment talents, and empowerment on asthma self-control practices suggested that with reasonable judgment competencies empowered patient's self-control more accurately, which results in better asthma control [6]. Research focusing objective markers (e.g., lung feature measures) and the development of devices that could improve patient health literacy as well as asthma management have been widely acknowledged at present [7].

Management of disease becomes difficult when people don't have enough knowledge regarding their disease condition. Asthma is wide spread disease & people usually do not have adequate knowledge regarding its control. Health literacy is an important area to be considered while designing health promotion initiatives [8]. In Pakistan, 15 million Pakistani children and 7.5 million adults suffer from asthma. People lack access to basic health care facilities and have inadequate awareness about disease condition and use of medicine which in turn leads to poor asthma control and increases health care cost [9]. Health education programs must be designed to aware patients regarding asthma medications use and appropriate techniques for using devices. But before this the status of present health literacy of asthmatic patients' needs to be assessed in order to identify factors which need to be addressed while designing health education programs for appropriate management of asthma. Less evidence is available regarding assessment of health literacy which leads to increase disease burden, morbidity and mortality. Therefore, the present study was designed to measure functional health literacy among asthmatic patients in Pakistan.

Methodology

A descriptive cross-sectional study design was used to assess health literacy among asthmatic patients in twin cities of Pakistan. Study approval was obtained from ethical committee of Hamdard University (ref. No. HU/DRA/2017/554). Beside this, approval from Medical Superintendent of the hospitals, proprietor of clinics and owner of community pharmacies were taken for data collection from patients. Informed and verbal consent for participation was taken from the respondents. Respondents were ensured for the confidentiality of information verbally as well as under taking were signed by the principal investigator. Study site for this research included outpatient departments of public and private sector hospital, private clinics and specialty clinics for asthmatic patients. Study population include asthmatic patients who were visiting the outpatient department of health care facilities for their follow up treatment. Any asthmatic patient diagnosed with duration of disease of at least one year with minimum primary level education was included. Patient must have a complete record of his/her disease. Patient being treated in any 'usual care' setting: primary; secondary; tertiary care, e.g. in the hospital, community, home or rehabilitation were included. The age limit of respondents were 25-65 years. While non-asthmatic illiterate patient were not the part of the study. Moreover, patients having any other respiratory disease effecting asthma were also excluded. Calculation of sample size was performed by raosoft® sample size calculator at 95 % confidence interval and 5% margin of error. The calculated sample size was 382. Convenience sampling technique was used to select respondents. All respondents available at the time of data collection were selected.

A pre-validated data collection tool S-TOFHLA (short test of functional health literacy in adults) was used to assess the functional health literacy of asthmatic patients. Written permission had been obtained from the respective organization for using this tool. Questionnaire was self-administered to the respondents. The questionnaire was comprised of two sections: Passage A is regarding x-ray guidance & passage B is about Medical rights and responsibilities. The time allocated to patients for completing the questionnaire after reading both passages was seven minutes. The questionnaire was comprised of 36 multiple choice questions (16 in passage A and 20 in passage B). Administration of S-TOFHLA is easier than TOFHLA as the former is a quicker, more efficient way of determining functional health literacy. Section one of the tool is of demographics. Section two starts with passage A. Scoring key was used to conduct the scoring of the tool. Score assigned to correct option was 1 while 0 given to incorrect answer. Correct answers were summed for every page and total score was recorded on ultimate scoring column as the reading comprehension raw score and then it was compared with score ranges given for S.Tofhla. The score range was 0-36. The score range 0-16 indicate inadequate functional health literacy meaning patient is unable to study and interpret health texts, score range 17-22 depict marginal functional health literacy that imply effected person has problem reading and decoding health texts & scores 23-36 suggest adequate health literacy means effected person can study and interpret maximum health texts. Pilot testing was conducted on 10 % of the sample size to check the reliability of tool. The value of cronbach's alpha was 0.72 which lies in the accepted reliability value for the tool. Data collection was conducted by the principal investigator trained by the supervisor. The questionnaires were hand delivered to the patients and collected back after 7 minutes to avoid any type of biasness. After data collection, data was cleaned coded and entered in SPSS 21. Descriptive statistics comprising of frequencies and percentages were calculated. Chi-square test ($p \geq 0.05$) was performed to find out the association among different variables.

Results

Of the total 382 respondents, 66% (n=252) were male while 35% (n=130) were female. Of the total 382 respondents, 38.5% (n=147) were in age group of 25-35 years, 42.4% (n=162) were from 35-45 years and 19.1% (n=73) were from 45-55 years of age. Of the total 382 respondents, 57.6% (n=220) were matriculate, 39.5% (n=151) were intermediate, 2.9% (n=11) were graduate. Of the total 382 respondents, 76.2% (n=291) were earning

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20000 of income, 22.8% (n=87) were earning 21000-35000, 1% (n=4) were earning 35000-50000. Regarding the duration of disease, of the total 382 respondents, 47.6% (n=182) were newly diagnosed, 44% (n=168) were suffering from 1 year and 8.4% (n=32) from 1-5 years. Regarding the duration of treatment, of the total 382 respondents, 91.6% (n=350) had 1 year, 8.4% (n=32) had 1-5 years (Table 1).

Table 1: Demographic Characteristics.

Indicators	n (%)	
Gender	Male	252(66%)
	Female	130(34%)
Age	25-35	147(38.5%)
	35-45	162(42.4%)
	45-55	73(19.1%)
Qualification	Matriculation	220(57.6%)
	Intermediate	151(39.5%)
	Graduation	11(2.9%)
Income	20000	291(76.2%)
	21,000-35000	87(22.8%)
	35000-50000	4(1%)
Duration of Disease	Newly Diagnosed	182(47.6%)
	1 year	168(44%)
	1-5 years	32(8.4%)
Treatment of disease	1year	350(91.6%)
	1-5years	32(8.4%)

The correct knowledge of health literacy regarding different parameters of x-ray preparation among asthmatic patients was: x-ray purpose (n=345, 90.3%), instruction before x-ray (n=381, 99.7%), timing of x-ray (n=382, 100%) & diet plan before x-ray (n=382, 100%). A detailed description is given in (Table 2).

Table 2: Assessment of reading comprehensive skills for Passage A: (X-Ray Preparation) among asthmatic patients in Pakistan

Indicator	Correct	Incorrect
	n (%)	n (%)
Your doctor has sent you to have a stomach X-Ray	345(90.3%)	37(9.7%)
You must have an empty stomach when you come for it	381(99.7%)	1(.3%)
The X-Ray will take from 1 to 3 hours to do	382(100%)	0
For supper have only a little snack of fruit, toast & jelly, with coffee or tea	382(100%)	0
After midnight, you must not eat or drink	382(100%)	0
Anything at all until after you have had the X-Ray	382(100%)	0
Don't eat breakfast	382(100%)	0
Don't drink, even water	382(100%)	0
If you have any questions, call the X-Ray department	6(1.6%)	376(98.4%)

Table 3: Assessment of reading comprehensive skills for Passage B: (Medical rights & Responsibilities) among asthmatic patients in Pakistan.

Indicator	Correct	Incorrect
	n (%)	n (%)
I agree to give correct information to see if I can receive Medicaid	6(1.6%)	376(98.4%)
I agree to provide the county information to prove any statement given in this application & hereby give permission to the county to get such proof. I understand that for Medicaid I must report any changes in my circumstances within ten days of becoming aware of the change	5(1.3%)	377(98.7%)
I understand that if I DONOT like the decision made on my case, I have the right to a fair hearing. I can request a hearing by writing or calling the county where I applied	5(1.3%)	377(98.7%)
If you want TANF for any family member, you will have to sign a different form	5(1.3%)	377(98.7%)
However, we will use the date on this form to determine your eligibility	5(1.3%)	377(98.7%)

The correct knowledge of health literacy regarding parameters of medical rights & responsibilities among different asthmatic patients was: sharing of accurate information

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(n=6, 1.6%), level of agreement (n=5, 1.3%), right of sharing information (n=5, 1.3%), and understanding of application (n=5, 1.3%). A detailed description is given in (Table 3).

The mean composite scores of functional health literacy among different asthmatic patients were: male (20.0, ±0.65), female (19.9, ±0.948); 25-35 years (19.8, ±1.1), 35-45 years (20.1, ±0.25), and 45-55 years (20.0, ±0.25); matriculation (20.0, ±0.35), intermediate (20.0, ±0.30), graduation (17.2, ±3.1); income 20000 (20.0, ±0.49), 21000-35000 (20.0, ±0.70) and 35000-50000 (15.5, ±3.0); newly diagnosed disease (19.9, ±1.0), 1 year of disease (20.1, ±0.36); 1 year treatment of disease (20.0, ±0.80).Significant association (p ≥ 0.05) among health literacy and different demographics such as age, gender, qualification, duration of diagnosis and income level in asthmatic patients was observed (Table 4).

Table 4: Comparison of mean scores of functional health literacy of asthmatic patients according to different demographics.

Demographics	Passage A (X-Ray)	Passage B (Medical rights & Responsibilities)	Composite	P-value	Description of score
Gender Mean (±S.D)					
Male	10.1(±0.35)	9.9(±0.44)	20.0(±0.65)	0.03	Marginal
Female	10.04(±-0.301)	9.8(±0.75)	19.9(±0.948)		Marginal
	Age Mean (±S.D)				
25-35	10.04(±-0.37)	9.8(±0.91)	19.8(±1.1)	0.04	Marginal
35-45	10.1(±0.32)		10.1(±0.32)		Marginal
45-55	10.0(±0.25)		20.0(±.25)		Marginal
Qualification (±S.D)					
Matriculation	10.1(±0	9.9(±0.06)	20.0(±0.35)	0.001	Marginal
Intermediate	.32)				
Graduation	10.0(±0.30)		20.0(±0.30)		Marginal
	9.05(±0.52)	7.7(±2.6)	17.2(±3.1)		Marginal
Income (±S.D)					
20000	10.0(±0.33)	9.9(±0.29)	20.0(±0.49)	0.023	Marginal
21000-35000	10.0(±0.297	9.9(±0.53)	20.0(±70)		Marginal
35000-50000	9.2(±0.50)	6.2(±2.5)	15.5(±3.0)		Marginal
Duration of disease Mean (+SD)					
Newly diagnosed	10.0 (±0.36)	9.8(±0.81)	19.9(±1.0)	0.045	Marginal
1 year	10.1(±0.33)	9.9(±0.07)	20.1(±0.36)		Marginal
1-5 years	10.1(±0.33)	10.7 (±0.07)	20.2 (±0.36)		Marginal

Chi-square test (p ≥ 0.05).

Discussion

Health literacy is necessary for understanding medical terms in order to improve understanding regarding disease severity, easy communication with health care professionals, active participation in self-care and taking decision for improving quality of life [10]. The results of the present study showed marginal health literacy among asthmatic patients in Pakistan. This might be due to the fact that asthmatic patients might have difficulty in reading and interpreting health texts due to English language barrier. Similar findings were reported from another study highlighting English language as barrier for people to know about their health condition [11]. Inadequate health literacy is linked with poor health outcomes and use of health care services. The results of the present study reported significant association among different gender, age, qualification, income, duration & treatment of asthmatic patients was reported in relation to their level of functional health literacy. Similarly, asthma self-management skills and use of acute medical services for asthma have been linked to various sociodemographic factors [12]. Health literacy plays an important role in learning and retaining self-management skills in patients with chronic diseases. The current study showed that general understanding of x-ray preparation and medical rights responsibilities was comparatively high among males than females. The general understanding of x-ray preparation and medical rights responsibilities was comparatively high among respondents in age group of 35-45 years and having better education level. This might be due to the fact that more educated people have better self-care and they suffered less from disease. Similarly, fewer years of education completed has been implicated as an important risk factor in patients with asthma

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[13]. Low health literacy has been consistently related with more hospitalizations; greater use of emergency care; poorer ability to demonstrate taking medications appropriately and ability to interpret labels and health messages [14]. The current study reported relatively better health literacy among newly diagnosed asthmatic patients and those with better income status. Similarly, inadequate health literacy was associated with a greater likelihood of hospitalization for asthma exacerbations in the past 12 months [15].

Conclusion

The present study concluded that asthmatic patients had marginal functional health literacy. They had difficulty reading, understanding, and interpreting most health materials. They were likely to take their medications incorrectly or failing to take prescribed diets or treatment regimens. Healthcare facilities of Pakistan must improve their quality of health education provided to asthmatic patients and incorporate sense of responsibility of patient counseling among physicians. 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 patients and also for continuous education programs and training sessions for healthcare professionals.

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