

Impact of Training Program on Promoting Patient Education Provided by The Primary Health Care Physicians of the Ministry of Health, An Interventional Study, Jeddah City, Saudi Arabia

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ABSTRACT

Background: Most physicians are able to diagnose and treat their patients efficiently; but according to relevant literature, few of them educate the patients regarding their disease and its management plan appropriately.

Objective: To identify barriers inhibiting efficient patient education, as well as and evaluate the effect of an educational intervention on the practice of patient education by primary health care physicians.

Subjects and Methods: The descriptive cross-sectional study and quasi-experimental design was conducted from August 2016 to July 2017. One PHCC from each region of Jeddah was selected as the study site for both the intervention and control groups. The study population consisted of physicians working in the PHCCs. Moreover, seventy patients each in the treatment and control groups were recruited after satisfying the inclusion and exclusion criteria to evaluate intervention with the quasi-experimental design.

Results: Among the twenty physicians enrolled, the most significant barriers identified were lack of patient education in PHC programs (80%), inadequate knowledge about new patient education methods (65%), lack of time (65%), lack of teaching tools for patient education (70%), lack of educational environment (60%), and lack of patient's motivation for learning (55%). The quasi-experimental design results demonstrated that the patient education documented improved the outcome in the intervention group as through increased awareness

of their disease, treatment/ preventive methods, investigation/ diagnostic tools, drug-related information, dietary intake and physical activity, and use of medical devices at the patient's three-month follow-up.

Conclusion: Patient-centered care has greatly evolved over the last few decades. Patient education is vital to helping patients understand their own condition, which inevitably improves their outcome. Moreover, with the interest and attention of all relevant stakeholders, the barriers that inhibit comprehensive and effective patients' education in the PHCCs of Saudi Arabia should be addressed.

Keywords: Primary Healthcare, Primary Healthcare Center, Patient Education, Physicians, Barriers.

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INTRODUCTION

Health education is a broad profession involving environmental, physical, social, emotional, intellectual and spiritual health.¹ It can be defined as "any combination of learning experiences designed to help individuals and communities improve their health, by increasing their knowledge or influencing their attitudes."² One of the elements of health education is specific disease education which is known as patient education (PE).³

PE can be defined as "the process of influencing patient behavior, producing changes in knowledge, attitudes, and skills required to maintain and improve health."⁴ It aims to empower unwell people, together with their families, to manage their treatment plan, prevent disease complications, promote their health, and improve

their quality of life.⁵ Proper PE has many advantages for the patients and their families, as it increases the patient's ability to cope and the overall supervision of his/her general health. Subsequently, the medical condition is more controlled and there is an improved understanding of the disease, diagnosis, and available treatment options. It also enables patients to participate in their treatment options, increases the patient compliance to treatment, helps them to learn healthy behaviors, increases patient confidence for disease self-control and decreases the side effects associated with the medical treatments.⁶⁻¹¹

PE helps patients with both acute and chronic diseases, but most of its benefits more apparent in long-term illnesses: therefore, PE

is included in health care services as a continuous process delivered to patients. Educational programs should be customized according to the health care providers who are treating the chronically ill patients. Such health care providers mainly include physicians, nurses, dieticians, pharmacists, physiotherapists, social workers, occupational health specialists, and chiropodists.⁵ According to the WHO, most patients do not obey health directions, as only less than 50% follow the treatment plan given by their health care providers. Most physicians are able to diagnose and treat their patients efficiently; few of them educate their patients appropriately. One of the main causes of this is the lack of physicians training on PE, in addition to a heavy workload and a lack of awareness about the importance of PE.^{5,12}

In Saudi Arabia, PE is one of the requirements needed by a Primary Health Care Center (PHCC) to be accredited by the Joint Commission International (JCI) or Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI).^{13,14}

In Jeddah city, the public health administration is using the Patient and Family Education (PFE) form to activate the process of PE at the PHCCs. However, no system existed to assess, monitor, or evaluate the process of PE.

A lack of scientific data pertaining to the current situation, despite the high importance and known benefits of PE, necessitates further research; thus, this research assessed the current situation with regard to PE using relevant data sources, figure out the obstacles preventing the achievement of an efficient PE, and test the effect of a scientific based intervention to promote PE provided by Primary Health Care (PHC) physicians in Jeddah city.

METHODS

The study was carried out in Jeddah city, a metropolitan Saudi city located in the middle of the eastern coast along the Red Sea. It is known as the Bride of the Red Sea and is considered the economic and tourism capital of the country. Jeddah is the second largest city after Riyadh with a population estimated around 4,082,184, among whom 1,952,891 are Saudis.¹⁵ Public health, prevention, and health promotion issues are managed by the public health administration of the health directorate of the Jeddah region with "health education" as one of its primary units. Its mission is to educate individuals and communities, through the provision of information and skills, to enable them to take responsibility for their health. Primary healthcare services are offered by almost all Primary Health Care Centers (PHCCs) in Jeddah city. The city of Jeddah is administratively divided into five sectors, with each containing a different number of PHCCs according to population density. The present study was conducted in selected PHCCs belonging to the Ministry of Health (MOH).

For the present study, two different research designs were used to achieve the research objectives. The study designs chosen were a descriptive cross-sectional study and a quasi-experimental design. The details of the respective study design and choice of selection are given below.

Descriptive Cross-Sectional Design: The descriptive cross-sectional study was used to identify the obstacles preventing the achievement of efficient patient education as seen from the physician's point of view by addressing the study questionnaires to the PHC physicians. The study design was considered appropriate as it allows for the economical collection of data on the barriers perceived by physicians who have worked at a PHCC

at one point in time. Moreover, the design was appropriate to analyze data quantitatively using descriptive and inferential statistics.

Quasi-Experimental Design (non-randomized pretest-posttest control group design): The Quasi-experimental design was used to assess the pre- and post-intervention changes in the PE provided by PHC physicians. The study checklist was filled out by the data collectors by asking the patients questions just after leaving the physician's clinic.

The study was completed in a 12-month period from August 2016 to July, 2017. The study population consisted of physicians working in the selected PHCCs. The physicians were assessed directly and were required to fill in the self-administered questionnaire having filled by the data collectors to avoid non-response bias. The data collectors were in turn trained by the principal investigator. The study population also included the patient population visiting selected PPHCs.

Considering, the study population consisted of both physicians working in the PHCCs and patient populations visiting different PPHC's, separate inclusion and exclusion criteria as required are outlined below.

- **Physicians:** All physicians practicing in PHCCs at the time of the research were eligible to be included in the study sample, provided they follow the inclusion and exclusion criteria. Inclusion criteria included practicing at the PHCCs of the MOH in Jeddah city, practicing at the same PHCCs for at least six months, both male and female doctors, and both Saudi and non-Saudi. Dentists and radiologists were excluded.
- **Patients:** Any patient attending the PHCCs of the MOH in Jeddah during the selected time frame was eligible for inclusion in the study sample if they fulfill the inclusion and exclusion criteria. Inclusion criteria included having any chronic diseases, both male and female patients and both Saudi and non-Saudi. Patients with acute diseases, those less than 18 years of age as ethical concerns, pregnant and lactating women, patients with psychiatric illness, speech defects as well as those with debilitating and life-threatening diseases were excluded.

The minimum number of patients desired for this study was estimated using the designated sample size software. The representative sample size was calculated depending on the average effect size of the study intervention. This average effect size of 0.5 was found through an extensive literature review of previous systematic reviews of the same intervention, and 95% CI and power of 80% was used to calculate the sample size. The final optimal sample size was revealed to be 128 with 64 in each group (the intervention group and the control group). Considering the present study as a follow-up study, the sample size was inflated around 10% to account for the non-response bias, incomplete responses, and the potential for the checklist to be filled out by the participants themselves. Therefore, the final sample size was estimated to be 140 with minimal 70 participants were enrolled in the intervention group and 70 patients enrolled in the control group. To ensure selection of a representative sample, multi-stage sampling technique was used.

- In the first stage, the PHCCs were grouped into four districts according to their geographical position as *Northeast, Northwest, Center-Southwest* and *Southeast*.

- In the second stage, through simple random sampling (SRS), using a computer random number generator, two PHCC were selected from each district with one as an intervention site and the other as the control site.
- In the third stage, the list of names of the physicians working at the intervention site and control site selected in stage 2 were obtained, then, all were invited to participate in the study.
- In the fourth stage, the patients who visited the already chosen physician's clinic of the intervention and the control groups were included in the study's sample for physician's assessment, and seven patients visiting each physician was enrolled to assess physician practices.
- Exit interviews were conducted. The study checklist for patients was filled out by the data collectors by asking the selected patients (for both intervention and control groups) immediately upon leaving the physicians' clinics.

An educational intervention for physicians was developed after extensive literature review and expert counseling. The educational intervention used in the present study was developed based on the systematic reviews from the Cochrane Effective Practice and Organisation of Care Group and delivered in the following way to physicians being recruited in the intervention group.¹⁶

The Control Group: The physicians working in the PHCCs recruited for the Control group did not receive the following educational intervention.

The Intervention Group: The physicians working in the PHCCs being recruited in the Intervention group received the educational intervention. They received the following educational intervention: The education material related to patient education that included good clinical practice guidelines, as well as elements, benefits and advantages of PE was distributed to the selected physicians. These materials were in the form of printed materials and were delivered by the data collectors trained by the investigator.¹⁷

The investigator trained the data collectors who met with the physicians in the intervention group in their practice settings (face-to-face visit) and delivered information related to the importance and the benefits of PE. The visits were held individually in the physicians' clinics and the duration of each visit was approximately 15 to 20 minutes.¹⁸⁻²⁰

Primary data was collected in the present study. As the study population included both physicians working in the PHCCs as well as the patients visiting these PHCC, two separate sets of data were used for the respective population. In the present study, the principal investigator meet with the data collectors and trained them appropriately and comprehensively so that they understood each and every details related to the process of data collection. There were 25 data collectors being hired who helped in the current study to collect data.

The self-administered structured, closed ended questionnaire designed in English was used to identify barriers faced by the physicians. The questionnaire helped identify the obstacles preventing the achievement of efficient PE as seen from the physicians' point of view. The validated questionnaire was adopted from a previous study done in Najran Armed Forces Hospital.²¹

The questionnaire consists of two parts: the first part collected demographic, education and work experience information for the

study participants (gender, age, nationality, language, marital status, qualifications and years of experience). The second part included questions used to identify the perceived barriers inhibiting efficient patient education by primary health care physicians. The reliability and feasibility of the checklist were ensured during the pilot study. Furthermore, to test the content validity, the questionnaire was distributed to a group of consultants with considerable experience in the field of patient education in order to obtain their opinions prior to the study. The questionnaires were filled out by the physicians working at the selected PHCCs both at the intervention site and Control site at baseline (start of the study). The questionnaire was filled out prior to intervention (outreach visit and printed material) to avoid any bias.

The primary data was also collected from the patients being recruited for the current study from both the intervention site and the control site. The closed ended questionnaire consisted of a checklist of variables included in the MOH - PFE form and was used to assess the changes in the patient education level incurred due to the PE provided by the PHC physicians.

The patient's questionnaire collected information related to the patient's education about his/her health (health problem, medical investigation, medication, nutrition, exercises, and medical devices). The same questionnaire was filled out by patients irrespective of whether they were in the intervention group or the control group. The exit interview was performed with the patients after their physician appointment. More specifically, the data collectors completed the patient checklist by interviewing each patient just after leaving the physician's clinic.

The assessment of patients recruited for the intervention and the control group were done as follows:

Pre-assessment (baseline assessment) for patients, both in the intervention and the control groups. This was done as the baseline and was completed at the start of the study.

Three-months post-intervention assessment was done for both groups (patients randomized to the intervention group and the control group).

Considering ethics involving human subjects are paramount the ethical issues were taken into consideration during this study. Informed verbal consent was obtained from all participating physicians and patients prior to recruitment in the study and detailed information related to all risks and benefits were given to them participating physicians.

The data collected were analyzed using SPSS version 21 (IBM). Descriptive statistics were performed, where categorical variables were presented as frequency and percentage. Bivariate analysis was performed to evaluate the intervention impact. The binary responses from patient's questionnaires were compared between the intervention group and the control group at the baseline and the three-month follow-up. Initially, cross tabulation was performed, and values were demonstrated as frequency and percentages. Chi square statistics were also performed to compare awareness about disease, treatment and preventive methods, investigations, drug related awareness, food intake and physical activity and getting/ using medical devices both at the baseline (pre-assessment) as well as the three-month follow-up. P-value ≤ 0.05 was considered significant. Cross tabulation was performed, and values were demonstrated as frequency and percentages. P-value ≤ 0.05 was considered significant.

Table 1: Barriers identified by Physicians working at PHCCs

WORKING SITUATION	n	Percentage
Inadequate knowledge about new patient education methods		
Yes	13	65%
No	7	35%
Lack of patient education in PHC programs		
Yes	16	80%
No	4	20%
Job satisfaction		
Yes	10	50%
No	10	50%
Salary insufficiency		
Yes	7	35%
No	13	65%
Lack of time		
Yes	13	65%
No	7	35%
EDUCATIONAL FACILITIES BARRIERS		
Lack of teaching tool for patient education		
Yes	14	70%
No	6	30%
Lack of good educational environment		
Yes	12	60%
No	8	40%
Lack of coordination with Health Education Division		
Yes	12	60%
No	8	40%
PATIENT'S CHARACTERISTICS BARRIERS		
Lack of common language and culture for communication with patients		
Yes	4	20%
No	16	80%
Lack of patient's motivation for learning		
Yes	11	55%
No	9	45%
Existence of anxiety and pain in patients		
Yes	7	35%
No	13	65%

Table 2: Comparison between the Intervention and the control groups at the three-month follow-up

DISEASE INFORMATION	Intervention Group (n = 70)	Control Group (n = 70)	Total (n = 140)	P-value
Disease Definition				
Yes	67 (95.7)	41 (58.6)	108 (77.1)	0.001
No	3 (4.3)	29 (41.4)	32 (22.9)	
Cause of Disease				
Yes	65 (92.9)	38 (54.3)	103 (73.6)	0.001
No	5 (7.1)	32 (45.7)	37 (26.4)	
Symptom of Disease				
Yes	65 (92.9)	46 (65.7)	111 (79.3)	0.001
No	5 (7.1)	24 (34.3)	29 (20.7)	
TREATMENT AND PREVENTION				
Treatment Options				
Yes	62 (88.6)	43 (61.4)	105 (75)	0.001
No	8 (11.4)	27 (38.6)	35 (25)	
Preventive Methods				
Yes	62 (88.6)	28 (40)	90 (64.3)	0.001
No	8 (11.4)	42 (60)	50 (35.7)	

INVESTIGATIONS				
Indication for Investigation				
Yes	48 (68.6)	30 (42.9)	78 (55.7)	0.004
No	19 (27.1)	29 (41.4)	48 (34.3)	
Not Applicable	3 (4.3)	11 (15.7)	14 (10)	
Conducting Test				
Yes	46 (65.7)	24 (34.3)	70 (50)	0.001
No	21 (30)	38 (54.3)	59 (42.1)	
Not Applicable	3 (4.3)	8 (11.4)	11 (7.9)	
Investigation result date				
Yes	48 (68.6)	31 (44.3)	79 (56.4)	0.015
No	18 (25.7)	31 (44.3)	49 (35)	
Not Applicable	4 (5.7)	8 (11.4)	12 (8.6)	
DRUG AWARENESS				
Drug Name				
Yes	39 (55.7)	32 (45.7)	71 (50.7)	0.140
No	31 (44.3)	35 (50)	66 (47.1)	
Not Applicable	0 (0)	3 (4.3)	3 (2.1)	
Drug Dose				
Yes	59 (84.3)	63 (90)	122 (87.1)	0.272
No	11 (15.7)	6 (8.6)	17 (12.1)	
Not Applicable	0 (0)	1 (1.4)	1 (0.7)	
Drug administration				
Yes	65 (92.9)	64 (91.4)	129 (92.1)	0.347
No	5 (7.1)	4 (5.7)	9 (6.4)	
Not Applicable	0 (0)	2 (2.9)	2 (1.4)	
Drug duration				
Yes	64 (91.4)	47 (67.1)	111 (79.3)	0.002
No	6 (8.6)	22 (31.4)	28 (20)	
Not Applicable	0 (0)	1 (1.4)	1 (0.7)	
Drug contraindication				
Yes	35 (50)	17 (24.3)	52 (37.1)	0.003
No	35 (50)	50 (71.4)	85 (60.7)	
Not Applicable	0 (0)	3 (4.3)	3 (2.1)	
Drug side-effects				
Yes	29 (41.4)	25 (35.7)	54 (38.6)	0.191
No	41 (58.6)	42 (60)	83 (59.3)	
Not Applicable	0 (0)	3 (4.3)	3 (2.1)	
AWARENESS OF FOOD AND EXERCISE				
Recommended Food				
Yes	53 (75.7)	38 (54.3)	91 (65)	0.013
No	17 (24.3)	32 (45.7)	49 (35)	
Food to Avoid				
Yes	59 (84.3)	41 (58.6)	100 (71.4)	0.001
No	11 (15.7)	29 (41.4)	40 (28.6)	
Appropriate Exercise				
Yes	50 (71.4)	18 (25.7)	68 (48.6)	0.001
No	20 (28.6)	52 (74.3)	72 (51.4)	
AWARENESS OF MEDICAL DEVICES				
Obtaining Medical Devices				
Yes	49 (70)	26 (37.1)	75 (53.6)	0.001
No	12 (17.1)	22 (31.4)	34 (24.3)	
Not Applicable	9 (12.9)	22 (31.4)	31 (22.1)	
Using Medical Devices				
Yes	48 (68.6)	25 (35.7)	73 (52.1)	0.001
No	13 (18.6)	23 (32.9)	36 (25.7)	
Not Applicable	9 (12.9)	22 (31.4)	31 (22.1)	

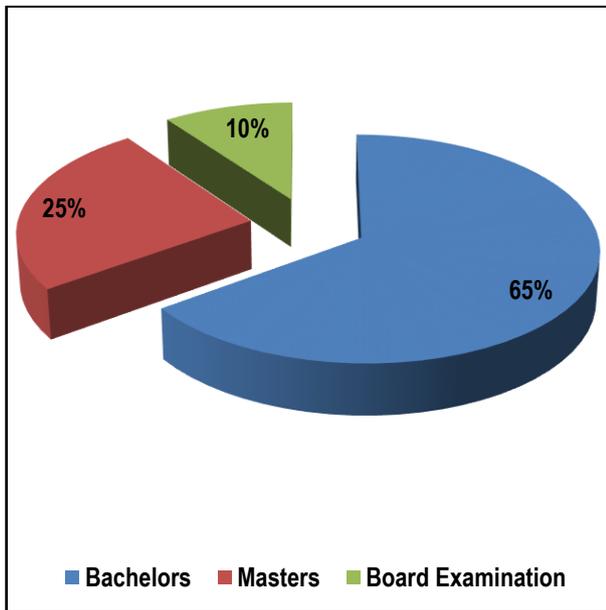


Figure 1: Qualification of the respondents (Physicians working at PHCCs)

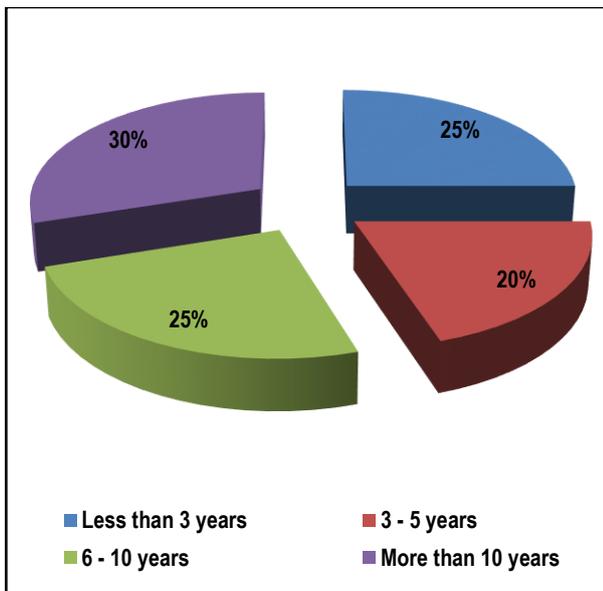


Figure 2: Working experience of the respondents (Physicians working at PHCCs)

RESULTS

In the present study, twenty physicians currently working at selected PHCCs were recruited. Ten physicians were recruited from the chosen intervention and control sites for the intervention group, 3 (15%) were recruited each from Al-Marwah and Al-Rabwah while 2 (10%) each were recruited from Al-Jameah and Kilo-14. Moreover, for the Control site, 2 (10%) each were recruited from Al-Rehab and Goyezah while 3 (15%) were recruited each from Al-Zahra and Al-Sulimaniah.

Among the twenty physicians included in the study, the majority (70%) were female. Similarly, 14 physicians (70%) were thirty years of age or older. Of the physicians interviewed, only five (25%) had non-Saudi nationality. All twenty physicians could speak Arabic. Figure 1 provides details of the qualification of the respondents. Among twenty physicians, 13 (65%) had bachelor's degree. The physician's years of work experience were summarized in Figure 2.

Table 1 provides details of the working situation barriers identified by physicians while communicating about patient education. Among the five parameters of the working situation barriers, the most significant were the lack of patient education in PHC programs (80%), inadequate knowledge about new patient education methods (65%) and the lack of time (65%). As regards the educational facilities barriers identified by physicians, while communicating about patient education, lack of teaching tool for patient education ranked first (70%), followed by lack of educational environment (60%) and lack of co-ordination with the Health Education Division (60%). Concerning the patient's characteristic barriers highlighted by physicians while communicating about patient education, the most significant were lack of patient's motivation for learning (55%), followed by anxiety and pain demonstrated by patients (35%). Only twenty percent (one fifth) of the physicians were of the view that the lack of common language and culture for communication with patients serves as a barrier in communicating patient education.

Comparison between the Intervention and the control groups at the three-month follow-up

The education of patients related to disease definition, cause of disease and symptoms of disease were compared between the intervention and the control group at the three-month follow-up. There was a significant difference in patient education related to disease definition, cause of disease and symptoms of disease between the intervention and the control group at the three-month follow-up as shown in Table 2. A greater proportion of patients in the intervention group were aware of the disease definition as compared to the control group at the three-month follow-up (95.7% Vs. 58.6%; p-value = 0.001). Similarly, a higher proportion of patients in the intervention group were aware of the cause of the disease or the etiology as compared to the control group at the three-month follow up (92.9% Vs. 54.3%; p-value = 0.001). Moreover, an increased proportion of patients in the intervention group were aware of symptoms of the disease as compared to the control group at the three-month follow-up (92.9% Vs. 65.7%; p-value = 0.001).

The education of patients related to treatment options and preventive methods were compared between the intervention and the control group at the three-month follow-up. There was significant difference in patient education related to treatment options and preventive methods between the intervention and the control group at the three-month follow-up as shown in Table 2. A greater proportion of patients in the intervention group were aware of treatment options as compared to the control group at the three-month follow-up (88.6% Vs. 61.4%; p-value = 0.001). Similarly, higher proportion of patients in the intervention group were aware about preventive methods for disease as compared to the control group at the three-month follow-up (88.6% Vs. 40%; p-value = 0.001).

The education of patients related to awareness of investigation and diagnostics was compared between the intervention and the control group at the three-month follow-up. There was a significant difference in patient education related to indication for investigation, how to conduct a test and investigation result date between the intervention and the control group at the three-month follow-up as shown in Table 2. Greater proportion of patients in the intervention group were aware about indication for investigation as compared to the control group at the three-month

follow-up (68.6% Vs. 42.9%; p-value = 0.004). Similarly, a higher proportion of patients in the intervention group were aware of conducting test as compared to the control group at the three-month follow-up (65.7% Vs. 34.3%; p-value = 0.001). Moreover, an increased proportion of patients in the intervention group were aware of investigation result date as compared to the control group at the three-month follow-up (68.6% Vs. 44.3%; p-value = 0.001). The education of patients related to drug indicated or prescribed was compared between the intervention and the control group at three-month follow-up. The following items were compared between the intervention and the control group at the three-month follow-up: awareness about drug name, drug dose, administration, dosage, duration, contraindication and side-effects. There was no significant difference in patient awareness related to awareness of drug name, drug dose, administration, and side-effects between the intervention and the control group at the three-month follow-up as shown in Table 2. However, a significant difference was identified between the intervention and control groups relating to awareness of drug duration and drug contraindication at the three-month follow-up. A significantly, greater proportion of patients in the intervention group (91.4%) were well aware of drug duration compared to 67.1% in the control group (p-value = 0.002). Moreover, a significantly higher proportion of patients in the intervention group (50%) were well aware of drug contraindication compared to 24.3% in the control group (p-value = 0.003).

The education of patients related to dietary food intake and physical activity were compared between the intervention and the control group at the three-month follow-up. There was a significant difference in patient education related to the recommended food, food to avoid and appropriate exercise awareness between the intervention and the control group at the three-month follow-up as shown in Table 2. A greater proportion of patients in the intervention group were aware of the recommended food as compared to the control group at the three-month follow-up (75.7% Vs. 54.3%; p-value = 0.013). Similarly, a higher proportion of patients in the intervention group were aware of food to avoid as compared to the control group at the three-month follow-up of three month (84.3% Vs. 58.6%; p-value = 0.001). Finally, significantly higher proportion of patients in the intervention group were aware about appropriate exercises as compared to the control group at follow-up (71.4% Vs. 25.7%; p-value = 0.001).

The education of patients related to awareness of medical devices was compared between the intervention and the control group at the three-month follow-up. There was a significant difference in patient education related to awareness of obtaining medical devices and using medical devices between the intervention and the control group at the three-month follow-up as shown in Table 2. A greater proportion of patients in the intervention group were aware on how to get medical device as compared to the control group at the three-month follow-up (70% Vs. 37.1%; p-value = 0.001). Similarly, a higher proportion of patients in the intervention group were aware of using medical devices as compared to the control group at the three-month follow-up (68.6% Vs. 35.7%; p-value = 0.001).

DISCUSSION

The descriptive cross-sectional study and quasi-experimental design was conducted to identify barriers inhibiting efficient patient

education and to evaluate the effect of an educational intervention on the practice of patient education by primary health care physicians of the ministry of health in Jeddah city. The research carried significant importance considering the scarcity of literature assessing whether or not primary healthcare physicians provide proper and sufficient information to their patients. Additionally, the research and measured the effect of an intervention directed toward those physicians in the process of patient education in Saudi Arabia. The patient's education is vital as it aims to instill knowledge and information into people in order to increase their awareness of personal health benefits and detriments.

The present study highlighted that the most important barriers identified by physicians working at PHCC were job satisfaction, lack of time, lack of continuing medical education and teaching tools for patient education, lack of co-ordination with the health education division and lack of patient's motivation for learning.

The study conducted in Saudi Arabia reported that compliance among diabetic patients regarding diet (56.7%) and exercise (43.4%) was found in a lesser number of subjects than compliance to medication (77.1%) and follow up (76.1%).²² Thus, more health education with patients regarding various aspects of diabetes and its management is helpful in improving their compliance. Another study, identifying the barriers, and the organizational factors affecting patient education conducted at Mashhad University of Medical Sciences (MUMS) reported that 79.4% of physicians considered lack of time to be the largest barrier to patient' training and 72% of the hospital managers ruled out the possibility of role play training.²³

The study carried out among 415 physicians to assess patient education and physicians' attitudes concluded that patient education was quite a wide-ranging activity among young physicians and attitudes were more or less positive. Importantly, this is the case although social influences did not strongly support patient education and there were a lot of barriers, especially a lack of time, too many patients and administrative tasks.²⁴ A study that surveyed 1,030 physicians (70% private practice) related to dietary counseling reported that the perceived barriers to delivery of dietary counseling were lack of time, patient noncompliance, inadequate teaching materials, lack of training in counseling, lack of knowledge, inadequate reimbursement, and low physician confidence.²⁵ Another study highlighted that the most important barriers for patient education were high work load, a mismatch of personnel to patients, job dissatisfaction, lack of managerial attention and inadequate funding for patient education.²⁶

The possession of an educative attitude by healthcare physicians is essential while undergoing training to acquire competency in therapeutic patient education (TPE). The time-related ("the right moment, how much time it takes"), the recognition of the benefits of TPE (to health care professionals' personal well-being), the sharing of emotions and feelings (quality of exchanges), the professional nature of TPE (educational competencies required), the holistic, interdisciplinary approach (complexity of the person and value of teamwork), the educational nature of the care relationship (education is an integral part of care) and the ethical dimension (introspection is essential) are integral for efficient patient education.²⁷

Patient education as an intervention was evaluated in the quasi-experimental design of the current study, the study reported an improved outcome in the intervention group as demonstrated by

increased awareness about disease, treatment/ preventive methods, investigation/ diagnostic tools, drug related information, dietary intake and physical activity, and use of medical devices.

There is sufficient literature that evaluated the impact of patient education. A quasi-experimental, prospective and comparative study that evaluate the knowledge that diabetic patients have about their disease before and after implementing a Diabetes Education Program reported improved patient outcome in these diabetic patients.²⁸ Another study, a quasi-experimental, prospective study involving an intervention group and a control group of individuals (Coronary Obstructive Pulmonary Diseases patients) followed-up for 12 months and reported that the implementation of awareness programs directed towards health-care professionals as well as patients in the context of PC can produce an increase in the quality of life and a decrease in the disease exacerbation, compared to standard clinical practice.²⁹ Another study evaluated the effects of a patient education program as compared to a traditional education program and made assessment based on a short-term (at discharge), medium-term (6-month follow-up) and long-term (12-month follow-up) basis in a multicenter quasi-experimental control group study of patients with coronary heart disease, researchers reported an overall good acceptance, a small treatment effect in the primary outcome variable (patients' knowledge), and improved secondary outcomes, such as attitude towards medication, planning of physical activity, psychological quality of life and satisfaction with the education program.³⁰

Another quasi-experimental study conducted in Nigeria reported that the introduction of a multidisciplinary patient centered self-management education programme improved key diabetes outcome measures for patients attending diabetes outpatient clinics at two hospitals.³¹

STRENGTHS OF THE STUDY

The study has certain strengths enhanced its value in terms of the implications of its findings. The strengths of the study are as follows:

- The present study used both a descriptive cross-sectional study and quasi-experimental design which were valid to address the desired objectives. The quasi-experimental design evaluated the impact of intervention (Patient Education) while the descriptive cross-sectional study helped in identification of the barriers experienced by physicians in effective patient education related to illness.
- The intervention was developed with the expert opinion and relevant literature along with the consideration of Saudi culture so that physicians can well adapt and have increased acceptability of intervention.
- An adequate number of patients were recruited as estimated by sample size in both the intervention and control group to assess the impact of intervention.
- The participants in the present study were recruited randomly from all four regions of Jeddah without the selection bias. This has increased the generalizability and external validity of the findings.
- The research was conducted according to the ethical guidelines and the anonymity/ confidentiality of the participants response was maintained throughout the research.

LIMITATIONS OF THE STUDY

The study has certain limitations; thereby the findings of the present study should be interpreted with caution. The limitations of the study are as follows:

- In the study conducted the same patients were not evaluated post-intervention at three-month follow-ups. The change in patient characteristics would have influenced the findings in terms of the impact of patient education. However, this could be argued that as physicians were intervened in the intervention group, and similar physicians seen patients in the intervention and the controls group respectively, this would have possibly limited the bias.
- Secondly, to identify the barriers a closed-ended questionnaire was developed with the help of expert opinions and a pilot study for content validity, but a qualitative study would have been more revealing and useful in identifying more relevant themes/ barriers as experienced by the physicians in patient education.
- Thirdly, to identify the barriers encountered by physicians a focus group discussion with relevant stake holders would have been very useful.
- For the patient assessment checklist, no information related to demographics (i.e. age, gender, marital status, ethnicity), education status and disease condition have been collected. Such information would have been valuable to better evaluate the impact of intervention.
- The present study was conducted in all regions of Jeddah, the inclusion of study site from remote/ rural areas as well as other cities would have increased the generalizability and external validity of findings.

CONCLUSION

The most important barriers identified by physicians working at the PHCCs were job satisfaction, lack of time, lack of continuing medical education and teaching tools for patient education, lack of co-ordination with the health education division and lack of patient's motivation for learning. Importantly, the patient education performed improved the outcome in the intervention group as demonstrated by increased awareness of disease, treatment/ preventive methods, investigation/ diagnostic tools, drug related information, dietary intake and physical activity, and use of medical devices. Considering the patient centered care which has evolved over the last few decades, patient education is vital in helping patients to better understand their own condition, which inevitably improves their outcome.

In the light of the present study, we could make the following recommendations:

- The Ministry of Health in Saudi Arabia should take necessary steps to increase the job satisfaction of physicians working at PHCCs. This can be accomplished by offering incentives, opportunities for learning and other benefits.
- Physicians often feel over-burdened and thus could not possibly better educate patients due to of lack of time, therefore, employing more doctors at the PHCCs could be a strategy to decrease the workload.
- Some physicians cited a lack of continuing medical education (CME) and lack of teaching tools as barriers to patient education. Thereby, the MOH should regularly

conduct training for doctors, and should provide all adequate resources including both digital and print.

- Co-ordination with the health education division, Ministry of Health Saudi Arabia and other relevant departments should be increased.
- The physicians working at PHCC should be assessed at regular intervals to evaluate their patient education delivery.
- To motivate patients to learn, suitable resources should be used and they should be educated using their own preferred methods. If highly educated and digital oriented, digital resources/ applications should be used developed in the local language by relevant departments and utilized.
- A multi-center study with multiple follow-ups at least one year out would be useful in evaluating the impact of patient education. Importantly, a disease specific study could also be done to evaluate the impact of patient education on individual diseases such as diabetes, hypertension, etc. Moreover, in such study's other relevant information (i.e. socio demographics and disease characteristics) should be collected. To better identify the barriers experienced by physicians in patient education a qualitative study with both an open-ended questionnaire and focus group discussion involving all stake holders would have been desirable. Moreover, an increased number of physicians could be recruited to fill in similar closed-ended questionnaire used to identify the barriers experienced by physicians.

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