

Experience of Conducting a Group Patient Education Program at a Tertiary Hospital in Riyadh

Mahmoud Ibrahim Almahameed^a Shadi F. Kakish^a Amani Abu-Shaheen^b

^aExecutive Administration of Nursing Affairs-Out Patient Department, King Fahad Medical City, Riyadh, Saudi Arabia; ^bResearch Center, King Fahad Medical City, Riyadh, Saudi Arabia

Keywords

Health education · Health promotion · Patient satisfaction · Staff satisfaction · Outpatient department

Abstract

Introduction: Patient education plays an essential role in improving patient compliance with treatment. Therefore, the study aimed to assess the healthcare educators' and the patients' and their companions' satisfaction and experience with regard to the health education program conducted during their waiting period in the outpatient department (OPD) at King Fahad Medical City. Moreover, compliance with planned educational topics was also assessed.

Methods: A pre-post interventional study, including patients and their companions as well as health educators in the waiting rooms of the various OPDs, was conducted. The pre-intervention phase involved group teaching sessions, followed by a survey that assessed patient and educator satisfaction and experience as well as compliance rate. Then, a loophole identification survey was conducted to determine the drawbacks based on which group teaching procedure was modified. Post-intervention, a modified teaching session was completed. **Results:** A total of 4,362 patients and their companions participated in this study, along with 22 health educators. During the pre-intervention phase, the patient and their companions reported a 78% satisfaction

rate for the conducted patient and family educational activities. While, after improving the group teaching process, the satisfaction rates increased to 90% in the post-intervention phase. The health educators' satisfaction rate improved remarkably from 27.3% to 86.4%. **Discussion/Conclusion:** By incorporating simple modifications in the educational activities, a higher satisfaction rate might be achieved among the participants and the health educators.

© 2023 The Author(s).
Published by S. Karger AG, Basel

Introduction

According to the World Health Organization, "Health promotion is the process of enabling people to increase control and improve their health" [1]. It motivates individuals to take initiatives in health literacy and multisectoral intervention to improve healthy habits [2]. Patient education plays an essential role in improving patient compliance with treatment, which favorably influences patients' satisfaction and treatment outcomes [3].

Hospitals play a critical part in health promotion and education, advancing well-being, anticipating illness, and providing rehabilitation services [4]. Nurses and clinical health educators are in the best place to meet patients and

their families' health promotion requirements [5]. As per the Joint Commission International (JCI) Accreditation Standards for Hospitals, a hospital contributes significantly to providing patient education to help involve patients and their families in care decisions and care procedures [6].

Patient education during the waiting period involves verbal communication between the healthcare professional (mostly a nurse) and the patients plays an essential role in meeting patients' learning requirements and can influence patient satisfaction rates [3, 7]. Moreover, educational activities in a hospital setting also benefit the patient's families and society [8]. Numerous studies have highlighted the benefits of patient education activities in a hospital setting [9, 10].

Saudi Arabia's population reached more than 33 million in 2018 [11]. With this rising trend, the healthcare burden has also increased and the government of Saudi Arabia has made tremendous efforts to improve healthcare through health education [12]. King Fahad Medical City (KFMC) is a tertiary referral hospital located in Riyadh, Saudi Arabia. Under its Strategic Plans 2015–2020, key strategies were adopted to provide excellence in health management and patient experience. Accordingly, the hospital's healthcare professionals (mainly nurses) participated in group teaching activities in the outpatient department (OPD) [13].

Previous studies have indicated that assessing patient satisfaction is crucial to health educators, doctors, hospital administrators, and patients themselves to guarantee that healthcare requirements are met and preserved [14]. A study conducted by Asiri et al. [14] in 2013 to evaluate patient satisfaction with various health educational services provided in primary healthcare centers reported the group teaching method as the most satisfactory method of patient education with a satisfaction rate of 87.2%. Moreover, it has been suggested that the absence of a national competency framework makes it all the more crucial to examine the current practices in health education across different settings and groups in Saudi Arabia [15].

Thus, the present quality improvement study aimed at assessing the satisfaction and experience of health educators, patients, and their companions regarding the health education program provided during their waiting period in the OPD at King Fahad Medical City both before and after the intervention. Moreover, compliance with the planned educational topics in the OPD was also examined. This study will provide useful real-world insights to program managers and healthcare administrators for conducting health education programs in similar

settings. The study included both patients/companions and health educators to gain the perspectives of multiple stakeholders while conducting a health education program and can ensure its successful implementation.

Methods

Health Education Program

The health education program was conducted for patients and their companions during their waiting period in the OPD at King Fahad Medical City. The departments included Women's Specialized Nursing OPD, King Salman Nursing OPD, Comprehensive Cancer Center OPD, Neuroscience Nursing OPD, Children's Specialized Nursing OPD, Surgical Specialties Nursing OPD, Medical Specialties Nursing OPD, and Obesity, Endocrine and Metabolic Nursing OPD section. A wide range of topics were covered under this program based on the specific department with a new topic initiated every month. The topics were developed by the health education and health promotion department as per patient needs. The program was delivered by health educators and nurses in Arabic language, and each session lasted a maximum of 15 min.

Study Design and Setting

A pre-post intervention assessment of the health education program was performed in terms of the experience and satisfaction of the patients, their companions, and the health educators in the OPD at King Fahad Medical City (KFMC), Riyadh, Saudi Arabia between July 2017 and December 2018. KFMC is one of the tertiary hospitals that provides outpatient specialized clinical care.

Study Population

The participants included in the study consisted of all adult patients and their companions with booked appointments and a registration number present in the waiting areas of various OPDs of KFMC. Patients who were unwilling to participate and did not have a registration number were excluded from this study. Additionally, the study included all health educators.

Recruitment

Using the convenience sampling technique, the study participants were invited to participate in the health education program in the waiting area of the OPD. The aim of the study was explained to them and their participation was voluntary. According to the KFMC hospital's target through a focus group method, the study aimed to target 2% of the total patients and their companions who visited the OPD per month.

Sample Size Estimate

While presuming 50% of the healthcare educators as well as patients and their companions' satisfaction and experience during their waiting period, a sample size of 1,570 produces a two-sided 95% confidence interval with a width equal to 0.05 (margin of error equivalent to 5% on either side of the presumed prevalence 50%) when the sample proportion is 0.50. Bearing the heterogeneous population structure and its intraclass variance, the number (1,570) was multiplied by the design effect of 3.0, which determined the requisite sample size of 4,610.

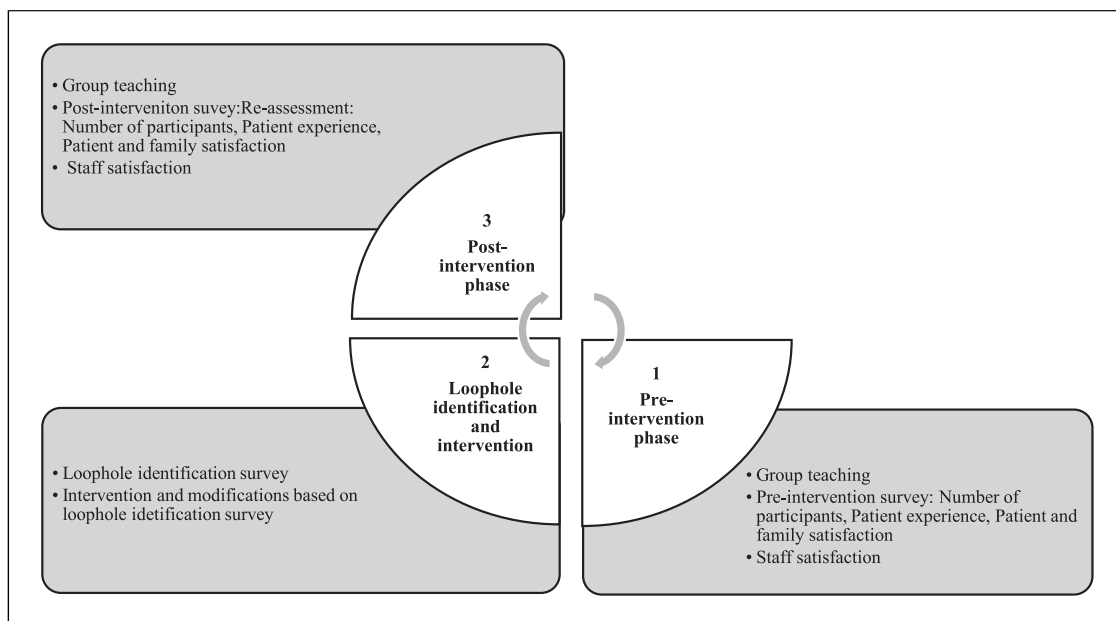


Fig. 1. Three phases of the study.

Study Procedure

The study procedure consisted of three stages: (1) the pre-intervention phase, (2) the loophole identification and intervention phase, and (3) the post-intervention phase. Details related to each stage have been summarized in Figure 1.

1. The pre-intervention phase took place between July 2017 and December 2017. In this phase, after the completion of the health education program in the OPD, questionnaires were distributed to patients/companions and health educators. Once the questionnaires were filled, they were collected. These questionnaires were used to assess the experience and satisfaction of the study participants with regard to the delivery of the health education program.
2. Following the pre-intervention phase, from January 2018 to May 2018, a loophole identification survey was conducted involving 20 staff nurses/healthcare assistants and 104 patients to identify the factors, if any, responsible for the low satisfaction rate observed after the assessment of patients and staff experience. These surveys are conducted to achieve an enhanced understanding of the potentials and weaknesses of the study and guide project development [16, 17]. The challenges faced by the nurses and patients have been presented as a fishbone diagram (Fig. 2) and the Pareto chart (Fig. 3).

Based on the loopholes identified related to presentation skills, availability of education material, environment, language barrier, and time of the lecture, interventions, and modifications were made by nursing and health education departments in the delivery of the health education program and were applied to the patients, their companions as well as the health educators. Table 1 shows the shortcomings of the pre-intervention phase of the health education program and the interventions and modifications made to resolve them.

3. In the post-intervention phase (from June 2018 to December 2018), the patients'/health educators' experience and satisfaction were determined again after conducting the modified health education program using the same questionnaires but were filled electronically using the KFMC hospital's iPad.

Study Tools

The study tools consisted of questionnaires which were developed by the study team based on their experience and a review of the literature and were pretested before the study commenced.

Questionnaire Used for Patients and Their Companions

An Arabic language questionnaire consisting of 14 questions was prepared to evaluate the patient experience and satisfaction. Closed-ended questions were included with response options on a 5-point Likert scale ranging from "Strongly Agree" to "Strongly Disagree." Moreover, demographic information including sex, educational level and age group was also asked.

- Patient experience: question 1–question 8 were used to assess patient experience.
- Patient and family satisfaction: question 9–question 14 were used to assess patient satisfaction.
- Compliance with planned educational topics: data were collected from the questionnaires to determine compliance with planned educational topics for lectures.

The Questionnaire Used for Health Educators

With regard to health educators, a questionnaire in the English language consisting of 12 questions was prepared and distributed to determine their satisfaction and experience. The first 11 questions were closed-ended and included response

Fishbone (Ishikawa) Diagram

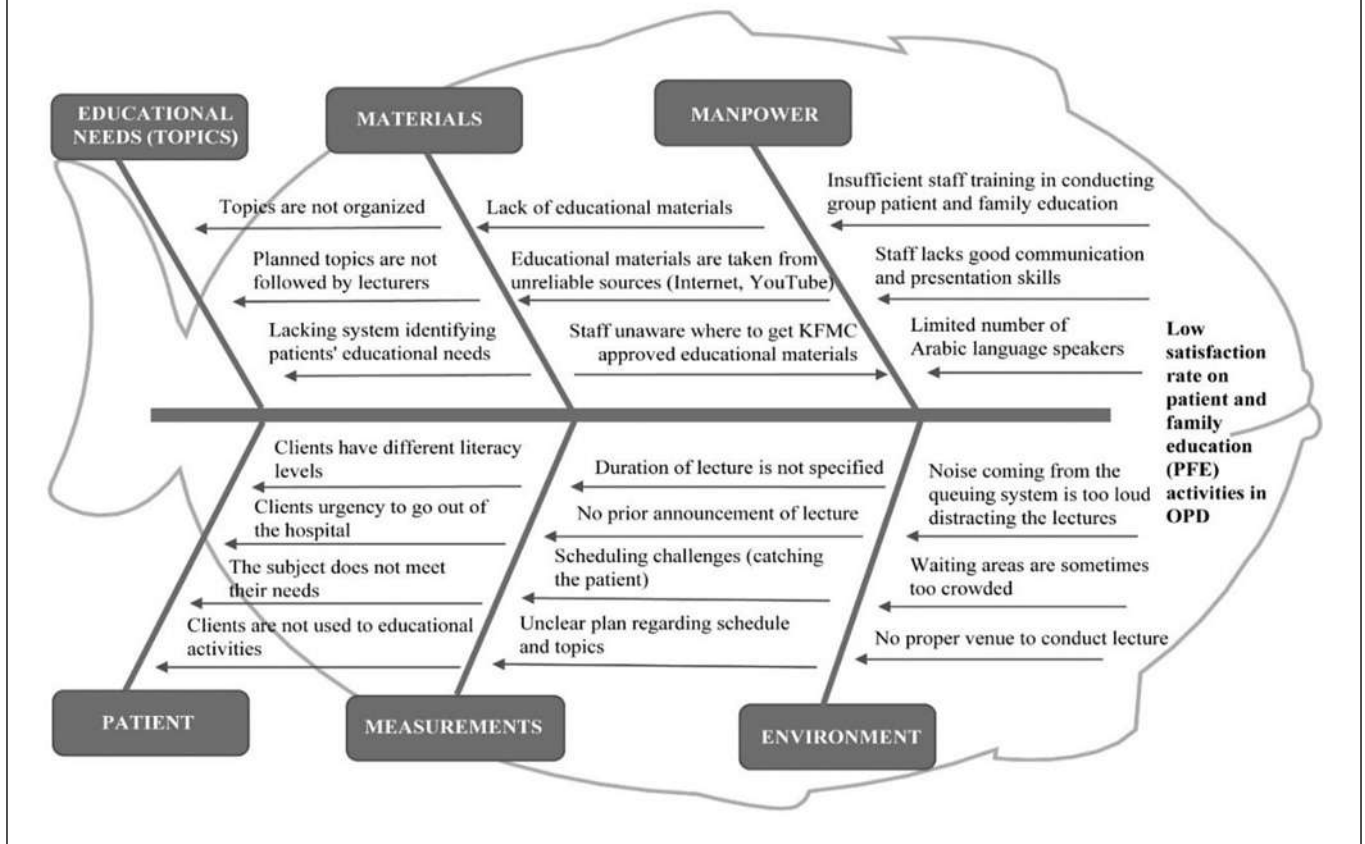


Fig. 2. Fishbone diagram representing the loopholes observed during the pre-intervention phase.

options on a 5-point Likert scale ranging from "Very Satisfied" to "Not Satisfied Completely." Question 12 was an open-ended question where respondents were asked to write any comments that they had.

Study Endpoints

The study endpoints were to determine the increase in the number of patients and their companions, improvement in patient experience, patient and family satisfaction rate, staff and nurse satisfaction rate, and compliance rate to planned educational topics after modifying the group teaching procedure. Loopholes associated with the teaching process after intervention were also assessed.

Data Management and Analysis

The data collected were stored electronically and were accessible only to the researchers. Data were analyzed descriptively and were presented as numbers and percentages using SPSS version 21.0 statistical software (IBM Corp., Armonk, NY, USA).

Results

Study Population

Overall, a total of 4,362 patients and their companions participated in this study. Of them, males made up the majority (65.2%), and the mean age of the participants was 48.2 ± 5.3 years. Additionally, a total of 22 health educators participated in this study.

Pre-Intervention versus Post-intervention Phase: Improvement in the Patient Experience

During the pre-intervention phase, 49.7% ($n = 2,166/4,362$) reported a positive patient experience of the conducted health education activities. The post-intervention survey results revealed an improvement in the patient experience of 67.2% ($n = 2,933/4,362$) (Table 2). The participants' believe that the educational sessions influence the patient, and society

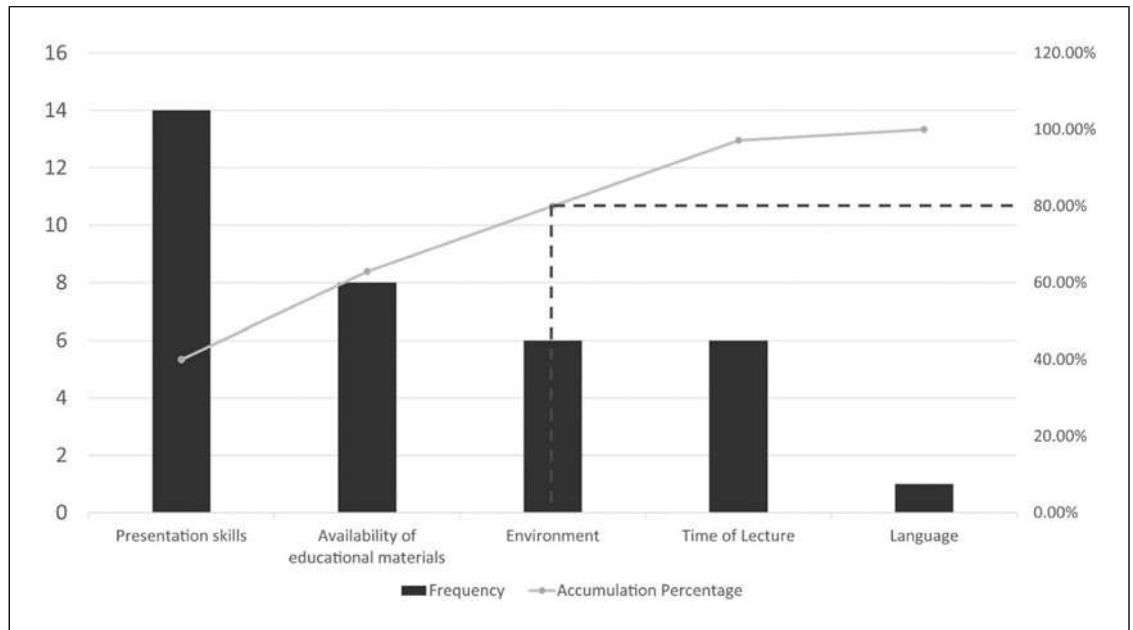


Fig. 3. Pareto chart representing the loopholes observed during the pre-intervention phase.

Table 1. Shortcomings of the pre-intervention phase and interventions made to resolve them

Shortcomings	Modification and interventions
Unavailability of patient and family education materials	New health education materials were prepared by the OPD nursing team The topics with unavailable material were not modified/replaced with the other. However, approved educational material related to that topic was downloaded from the hospital's intranet
Low staff satisfaction with regards to the current process of PFE; the inability of staff to answer specific patient queries	Monthly meetings were conducted and attended by the multidisciplinary team Structured group teaching activities were organized The efficacy of the group teaching activities was monitored through surveys. Electronic surveys were also uploaded on the iPad to expedite and receive prompt feedback from patients in response to the group teaching sessions The session was only conducted if the number of participants was more than four or about 4–10 On completion, the staff instructed the participants on how to fill the feedback forms through the iPad
Disturbances during the PFE lectures (Queuing system, noise, etc.)	–
The improper venue of the PFE lecture (overcrowded waiting areas)	–
Unclear time and schedule for the PFE lecture	The staff introduced themselves, the topic, and the duration of the session to the participants before conducting the session

Table 1 (continued)

Shortcomings	Modification and interventions
Patient gender	–
Insufficient training and poor presentation skills for the staff nurse	Approved new health education materials were uploaded on the hospital iPad for the accessibility of resources to all staff and participants
The limited number of Arabic language speakers	Two workshops were conducted for Arabic health educators to increase their competence in the delivery of PFE sessions

Table 2. Assessment of patient experience ($n = 4,362$)

Sr. No	Questions	Satisfaction rate* (%)	
		pre-intervention	post-intervention
1	Do you know that there are educational lectures by nurses while coming to the OPD?	1,478 (33.9)	1,552 (35.6)
2	Have you been invited before to attend an educational lecture on visiting the OPD?	1,343 (30.8)	1,552 (35.6)
3	Is there any announcement of the educational campaign?	1,310 (30.0)	1,804 (41.4)
4	Do you think that the educational sessions will have an influential effect on the patient and society?	2,788 (63.9)	3,817 (87.5)
5	Can the health practitioner (nurse) answer your questions?	2,586 (59.3)	3,859 (88.5)
6	Do the nurses give you useful teaching materials?	2,150 (49.3)	3,020 (69.2)
7	Can you learn and gain new information when you visit the clinic?	2,687 (61.6)	3,565 (81.7)
8	Do you share the information with your family and community?	2,922 (67.0)	4,027 (92.3)
9	Are you satisfied with the current method for health education?	2,217 (50.8)	2,726 (62.5)
10	Do you get health information through social media like WhatsApp, Twitter, YouTube, Snapchat, Instagram?	2,653 (60.8)	3,146 (72.1)
11	Do you get health information through television?	2,317 (53.1)	2,852 (65.4)
12	Do you get health information during your visit to the OPD or hospital?	2,452 (56.2)	3,565 (81.7)
13	Do you get health information through the newspaper?	1,545 (35.4)	1,971 (45.2)
14	Do you get health information through relatives and other patients?	1,881 (43.1)	3,607 (82.7)

OPD, outpatient department. *Number of patients giving a favorable response.

increased from 63.9% ($n = 2,788$) to 87.5% ($n = 3,817$) after the intervention. The percentage of health practitioners answering participants' queries also increased from 59.3% ($n = 2,586$) to 88.5% ($n = 3,859$). Table 2 compares the results of the pre-intervention survey with a post-intervention survey for patient experience.

Pre-Intervention versus Post-intervention Phase: Improvement in the Patient and Family Satisfaction Rate

During the pre-intervention phase, the patient and their companions reported a 78% satisfaction rate for the conducted patient and family educational activ-

ities. However, after improving the group teaching process by making interventions and modifications, the satisfaction rates increased to 90% in the post-intervention phase. There was an increase in the percentage of patients getting an answer to their queries (89.4% vs. 60.8%). Approximately 93% ($n = 4,057$) and 61% ($n = 2,656$) of participants reported being very satisfied with the educational sessions in terms of duration as per the results of pre-intervention and post-intervention surveys, respectively (Table 3). Figure 4 represents the patient and family satisfaction rate in terms of various departments.

Table 3. Assessment of patient and family satisfaction (n = 4,362)

Sr. No	Questions	Not satisfied		Satisfied		Strongly unsatisfied		Very satisfied	
		pre, n (%)	post, n (%)	pre, n (%)	post, n (%)	pre, n (%)	post, n (%)	pre, n (%)	post, n (%)
1	Did we answer your questions?	398 (9.1)	2 (0.04)	346 (7.9)	454 (10.40)	2 (0.05)	6 (0.1)	2,653 (60.8)	3,900 (89.4)
2	Was it too long for you?	398 (9.1)	1 (0.02)	352 (8.1)	304 (7.0)	1 (0.02)	0 (0)	2,656 (60.9)	4,057 (93.0)
3	Were our message and goal clear to you?	377 (8.6)	7 (0.7)	350 (8.0)	333 (7.6)	7 (0.20)	5 (0.1)	2,652 (60.8)	4,017 (92.1)
4	Would you recommend us to others?	378 (8.7)	3 (0.7)	347 (8.0)	336 (7.7)	3 (0.07)	1 (0.02)	2,646 (60.7)	4,022 (92.2)

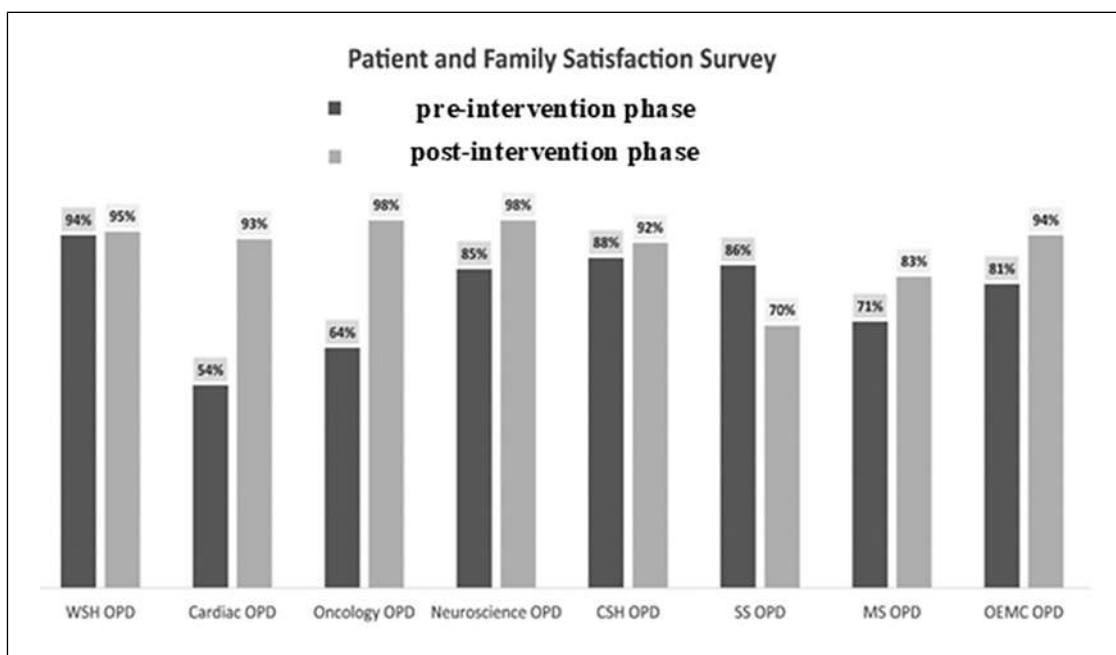


Fig. 4. Patient and family satisfaction rate in various departments of the hospital. CSH, Children’s Specialized Hospital; MS, medical specialties; OEMC, Obesity, Endocrine, and Metabolism Center; OPD, outpatient department; SS, surgical specialties; WSH, Women’s Specialized Hospital.

*Pre-Intervention versus Post-intervention Phase:
Improvement in Health Educators’ Satisfaction Rate*

The significant barriers owing to the lower health educators satisfaction rate was related to lecture timings (59.1%), availability of educational materials (54.5%), venue (40.9%), gender preferences of the participants (36.4%), presentation skills (31.8%), and language (9.1%). With the improvisation in the patients and family educational methods, the staff satisfaction rate improved remarkably from 27.3% to 86.4% satisfaction rate (Table 4).

*Pre-Intervention versus Post-intervention Phase:
Improvement in Compliance with Planned Educational Topics*

During the pre-intervention phase, the average compliance rate of the planned educational activities observed was 61.3%. However, with the availability of patient education materials, compliance with planned educational topics in the OPD increased by 38.8%, thereby strengthening the project structure.

Table 4. Assessment of staff satisfaction (*n* = 22)

Sr. No	Questions	Satisfaction rate* (%)	
		pre-intervention	post-intervention
1	Are you satisfied with the current method of patient and family education?	6 (27.3)	19 (86.4)
2	Is it easy to get educational materials for the patients?	8 (36.4)	19 (86.4)
3	Are you able to answer the patient's questions and queries?	2 (9.1)	19 (86.4)
4	Do the patient's response to your call for the educational lecture?	8 (36.4)	18 (81.8)
5	Do you distribute the educational materials before and after each lecture?	7 (31.9)	19 (86.4)
6	Is language a barrier?	2 (9.1)	21 (95.5)
7	Is the place of lecture a barrier?	9 (40.9)	13 (59.1)
8	Is the time of lecture a barrier?	13 (59.1)	17 (77.3)
9	Is the availability of educational materials a barrier?	12 (54.5)	20 (90.9)
10	Is the gender of the patient a barrier?	8 (36.4)	18 (81.8)
11	Is your ability to explain and presentation skills a barrier?	7 (31.8)	20 (90.9)

*Number of nurses giving a favorable response.

Discussion

The KFMC hospital adopted some key strategies to initiate a group teaching project in the OPD. Group patient education activities have various benefits over individualized patient education methods in terms of cost-effectiveness, lesser workload, patients' preference for discussing topics during group sessions, and reduced repetition from individualized sessions [18–20]. The results of our study are consistent with the results of Asiri et al. [14], 2013 reporting a satisfaction rate of 78% (pre-intervention phase) and 90% (post-intervention phase). The previous study conducted by Merakou et al. [8], 2015 has also reported that group teaching methods are superior to individualized teaching methods. However, the study by Rickheim et al. [19], 2002 depicts no difference in either of the teaching methods.

Facilitating patients with health education during the waiting period for an OPD is a well-recognized way of utilizing time and improving patients' understanding and satisfaction regarding their health and management of their health issues [3]. The loophole survey reported unorganized topics, schedules, unavailability of educational materials, communication gaps, lack of presentation skills, and improper venue as significant shortcomings. Therefore, suitable modifications and interventions were adopted in the health education activities to improve the previously observed low satisfaction rates. The interventions included implementing electronic surveys, producing additional health education materials, staff training, organizing structured group education sessions, etc.

High patient satisfaction is associated with efficient communication, personalization of care, patient education, and continuity of care [21, 22], whereas a low rating in patient education disrupts the delivery of care and lowers care outcomes [23]. As patient satisfaction is mostly subjective, it is measured with the help of surveys. The patient satisfaction survey captures self-reported patient evaluations of various points of contact during their medical experience, such as the responsiveness of staff, clinician communication, technical skill, hospital environment, etc [24, 25]. A study by Tung et al. [26], 2009 demonstrates a positive association of patient education and patient satisfaction with the recommendation of a primary care provider to others. These results are consistent with our study, wherein 92.20% of the participants reported being very satisfied with the health education activities (post-intervention) conducted and would recommend the hospital to others.

As per the loophole identification survey results, many barriers faced by staff educators in delivering quality health education were highlighted, which included language, place, time of the session, gender, educational material, and presentation skills. A study by Livne et al., 2017 addressed various barriers to patient education experienced by the nurses. The study hypothesized that nurses' perceptions of patient education climate (importance of patient education, based on their daily experience) were related to the barriers of work overload, lack of policies and guidelines, and low priority to patient education, whereas the nurses' role perceptions as patient

educators were related to the barriers of difficulty in communicating with patients, insufficient professional knowledge and skills, and the belief that educating patients is not their responsibility. The solutions suggested for reducing barriers included prioritizing patient education, offering a supportive work environment, enabling time for teaching, offering clear guidelines and teaching resources, developing education skills for nurses, etc. In the present study, the FOCUS-PDCA quality model was selected to analyze and improve the drawbacks reported during the loophole identification survey [27, 28]. Root cause analysis and rigorous brainstorming were performed to identify the drawbacks/challenges associated with the pre-intervention survey [29].

In this study, the group teaching procedure was effectively modified based on the results of the loophole identification survey. These included conducting workshops, providing new health education materials, initiating monthly group teaching activities, and improving abilities for health educators, thereby enabling a higher staff satisfaction rate (86.4%). With the interventions and modifications, a 100% compliance rate to the educational topics was also achieved compared to a 61.25% compliance rate reported from the pre-intervention phase due to the unavailability of health education materials.

The limitation of this study is that the research was conducted in a single tertiary care hospital and it cannot be generalizable to other hospitals. The study recommends continuous monitoring and evaluation of health education activities that might provide adequate services to the patients, their families, and the healthcare providers. Continuous monitoring of patient satisfaction is done. An organized action plan and strategy need to be prepared to utilize the waiting period appropriately. Moreover, loophole assessment surveys should be conducted regularly to assess the shortcomings, and they should be resolved by taking necessary measures. More studies are needed in this area in different clinical settings to enhance patient and healthcare providers' satisfaction.

Conclusion

Effective health education is a collaborative effort made by the participants and health educators to attain satisfaction. Health educators play an essential role in assisting people to achieve their health goals

consistent with their lifestyles, values, and beliefs. Patients and healthcare providers should be surveyed to assess their experience, satisfaction, and drawbacks associated with them, thereby facilitating improvisation as and when necessary. By incorporating simple modifications in the educational activities, a higher satisfaction rate can be achieved among the participants and the health educators. This article was previously posted to the medRxiv preprint server on October 22, 2019 [30].

Acknowledgments

The authors would like to thank the Research Center, King Fahad Medical City, Riyadh Second Health Cluster, Riyadh, Saudi Arabia for the support in preparing the manuscript.

Statement of Ethics

This study was approved by the King Fahad Medical City (KFMC) IRB, approval number 19-352Q, which is following the principles of the Helsinki Declaration and good clinical practice guidelines. Written informed consent was obtained for participation in the study.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Funding Sources

This study was not supported by any sponsor or funder.

Author Contributions

Mahmoud Ibrahim Almahameed carried out the study, participated in the study design, and wrote the final manuscript. Shadi F. Kakish participated in the study design, in the interpretation of data, and drafting the manuscript. Amani Abu-Shaheen conceived the study, participated in its design, and drafted the manuscript. Additionally, all authors read and approved the manuscript.

Data Availability Statement

All data generated or analyzed during this study are included in this article. Further inquiries can be directed to the corresponding author.

References

- 1 Health Promotion: World Health Organization; 2020. Available from: <https://www.who.int/healthpromotion/fact-sheet/en/>.
- 2 Health promotion and disease prevention through population-based interventions, including action to address social determinants and health inequity: World Health Organization; Available from: <http://www.emro.who.int/about-who/public-health-functions/health-promotion-disease-prevention.html>.
- 3 Marcus C. Strategies for improving the quality of verbal patient and family education: a review of the literature and creation of the EDUCATE model. *Health Psychol Behav Med*. 2014;2(1):482–95.
- 4 World Health Organisation. Standards for health promotion in hospitals. Copenhagen: WHO Regional Office for Europe; 2004.
- 5 Kempainen V, Tossavainen K, Turunen H. Nurses' roles in health promotion practice: an integrative review. *Health Promot Int*. 2013; 28(4):490–501.
- 6 Joint commission international accreditation Standards for hospitals. Available from: https://www.jointcommissioninternational.org/assets/3/7/JCI_Standards_Only_6th_Ed_Hospital.pdf.
- 7 Oermann MH. Effects of educational intervention in waiting room on patient satisfaction. *J Ambul Care Manage*. 2003;26(2):150–8.
- 8 Merakou K, Knithaki A, Karageorgos G, Theodoridis D, Barbouni A. Group patient education: effectiveness of a brief intervention in people with type 2 diabetes mellitus in primary health care in Greece: a clinically controlled trial. *Health Educ Res*. 2015;30(2):223–32.
- 9 Nursing scope and standards of practice: American Nurse Association. Available from: <https://www.nursingworld.org/practice-policy/scope-of-practice/>.
- 10 Best JT, Musgrave B, Pratt K, Hill R, Evans C, Corbitt D. The impact of scripted pain education on patient satisfaction in outpatient abdominal surgery patients. *J Perianesth Nurs*. 2018;33(4):453–60.
- 11 Population by gender, age groups and nationality (Saudi/non-Saudi). General Authority for Statistics; 2018.
- 12 Al-Hashem A. Health education in Saudi Arabia: historical overview. *Sultan Qaboos Univ Med J*. 2016;16(3):e286–92.
- 13 Suwaidan H. KFMC strategic plan 2015-2020; 2015. Available from: <http://intranet/sites/PSHOC/Strategic%20Project/KFMC%20Strategic%20Plan%202015-2020%20.pdf#search=KFMC%20Strategic>.
- 14 Asiri N, Bawazir A, Jradi H. Patients' satisfaction with health education services at primary health care centers in Riyadh, KSA: Community Medicine & Health Education; 2013.
- 15 Alageel S, Al-Sayyari L, Alhurishi SA. Identifying the needed knowledge and skills for health education specialists: qualitative study with stakeholders in Saudi Arabia. *Discov Educ*. 2023;2(1):10.
- 16 Abdinnour S, Saeed K. User perceptions towards an ERP system. *J Enterprise Inf Manag*. 2015;28(2):243–59.
- 17 Parnaby P. Evaluation through surveys; 2006. Available from: <https://www.idea.org/blog/2006/04/01/evaluation-through-surveys/>.
- 18 Carneiro Cd S, Oliveira AP, Lopes Jd L, Bachion MM, Herdman TH, Moorhead SA, et al. Outpatient clinic for health education: contribution to self-management and self-care for people with heart failure. *Int J Nurs Knowl*. 2016; 27(1):49–55.
- 19 Rickheim PL, Weaver TW, Flader JL, Kendall DM. Assessment of group versus individual diabetes education: a randomized study. *Diabetes Care*. 2002;25(2): 269–74.
- 20 Singla DL, Jasser G, Wilson R. Effects of group education on patient satisfaction, knowledge gained, and cost-efficiency in an anticoagulation center. *J Am Pharm Assoc*. 2003;43(2):264–6.
- 21 Murdock A, Griffin B. How is patient education linked to patient satisfaction? *Nursing*. 2013;43(6):43–5.
- 22 Tevis SE, Kennedy GD, Kent KC. Is there a relationship between patient satisfaction and favorable surgical outcomes? *Adv Surg*. 2015; 49(1):221–33.
- 23 Vuong K. Patient education as A quality measure: a study based on HCAHPS; 2016.
- 24 Al-Abri R, Al-Balushi A. Patient satisfaction survey as a tool towards quality improvement. *Oman Med J*. 2014;29(1):3–7.
- 25 Patient satisfaction surveys. *NEJM Catalyst*. 2018;4(1).
- 26 Tung YC, Chang GM. Patient satisfaction with and recommendation of a primary care provider: associations of perceived quality and patient education. *Int J Qual Health Care*. 2009;21(3):206–13.
- 27 E Knight J, Allen S. Applying the PDCA cycle to the complex task of teaching and assessing public relations writing. *Int J High Educ*. 2012;1(2):67–83.
- 28 Maruyama T, Inoue M. Continuous quality improvement of leadership education program through PDCA cycle. *China-USA Bus Rev*. 2016;15(01):42–9.
- 29 U.S Department of Health Human Services. Patient Safety Network Glossary. Available from: <https://psnet.ahrq.gov/primers/primer/10>.
- 30 Ibrahim MA, Kakish FS, Abu-Shaheen A. Championing health promotion through group patient and family education activities in the outpatient department of a tertiary care hospital. *BioRxiv*. 2019:813360.