Effectiveness of “percutaneous coronary intervention care program” on selected variables among patients undergoing percutaneous coronary intervention

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ABSTRACT

Objective: The study was conducted to assess the effectiveness of “percutaneous coronary intervention (PCI) care program” among patients undergoing PCI.

Subjects and Methods: A quasi-experimental design was adopted, and purposive sampling technique was used to enroll the patients in the experimental and control groups. Different tools were used to collect the data, which include numerical pain and comfort rating scale, Barthel Index for activities of daily living, assessment for the presence of vascular complications, modified CADEQ-SV questionnaire, State-Trait Anxiety Inventory scale, self-structured satisfaction scale, and PCI manual.

Results: There was a significant decrease observed in state anxiety (P < 0.001), pain level at 12 h (P = 0.03), discomfort within 12 h (P < 0.001) and 24 h (P = 0.002), improving knowledge regarding coronary artery disease (CAD) (P < 0.001), and activities of daily living as well as significant increase in satisfaction level (P < 0.001) among patients undergoing PCI in the experimental group than the control group.

Conclusion: The study concluded that this program was effective in reducing anxiety, pain, and discomfort and increased satisfaction level, knowledge regarding CAD, and independence in self-care activities for PCI patients.

Keywords: Coronary artery disease, educational and interventional package, percutaneous coronary intervention

Introduction

Globally, cardiovascular diseases are the topmost cause of mortality and morbidity. Among all cardiovascular diseases, coronary artery disease (CAD) occupies the number one position as the main cause of mortality.[1] According to the WHO’s Global Health Statistics 2008, CAD will become the number one killer disease in 2030, causing 14.2% of all deaths worldwide for 200 member countries.[2]

The options to treat patients with CAD are nonpharmacological, pharmacological, interventional cardiology procedures, and surgical treatment. Percutaneous coronary interventions (PCIs) are interventional cardiology procedures to improve survival and relieve symptoms by reducing the target stenosis and restoring the coronary blood flow.[3] Educational and interventional programs are considered to be vital strategies that can contribute to better health outcomes in patients with cardiac diseases. Therefore, preinformed education should be given by nurses to patients to reduce their physical and emotional discomfort. Post-PCI nursing care of patients undergoing PCIs includes close assessment, pain relief, sheath removal,
management of complications, patient positioning, ambulation, and health education.\textsuperscript{[3,4]} Therefore, the present study was conducted to develop, implement, and evaluate the effectiveness of “PCI care program” for patients undergoing PCI. The goal of this educational interventional program is to increase the patient’s interest and involvement in self-care by conveying knowledge and preparing them to manage their own condition.

**Subjects and Methods**

A quasi-experimental study to assess the effectiveness of “PCI care program” was conducted in one hundred patients undergoing PCI in cardiology units of Advance Cardiac Centre, PGI, Chandigarh, in the month of July–September 2017. The study participants were selected through purposive sampling, with 50 each in the experimental and control groups. The Institute’s Ethics Committee of PGI, Chandigarh, approved the study protocol; the study was also registered under the Clinical Trial Registry India with reference No. REF/2017/05/014405; and informed consent was obtained from the patients. The study duration was 10 weeks, July-September 2017.

The study participants were patients undergoing PCI in cardiology units of Advance Cardiac Centre, PGI, Chandigarh. All patients who were undergoing PCI were screened for eligibility criteria. All the patients who knew Hindi/Punjabi or English and who were willing to participate were the eligible criteria for the participants. Patients who met the inclusion criteria were enrolled and placed into the experimental or control group. There were no exclusion criteria in the study.

It was an interventional study, in which there were two groups – control group and experimental group. In this study, intervention was in the form of PCI care program. This program was developed after assessing the needs of the patient, review of literature, and suggestion of experts in the field of cardiology and nursing. PCI care program contained both interventional package and educational package which include care of the patient before, during, and after PCI; demonstrations and assistance in performing self-care activities; and teaching in appropriate language and via booklet regarding CAD, PCI, lifestyle changes, medication, and postdischarge to reduce anxiety and increase knowledge.

Patients in the control group received routine care. PCI care program was implemented in patients of experimental group 1 day before procedure; on the day of procedure; during procedure; and at the 0, 1\textsuperscript{st}, 2\textsuperscript{nd}, or till the day of discharge of patients from the hospital after PCI via informational booklet, demonstration, teaching in appropriate language with suitable audiovisual aids, and assisted in performing self-care activities. However, the majority of patients discharged on the 2\textsuperscript{nd} day after procedure. Follow-up was done on outpatient department basis at the 30\textsuperscript{th} day and telephonic approach at the 15\textsuperscript{th} and 30\textsuperscript{th} days after PCI.

Tools of the present study included different parts. They were patient pro forma, numerical pain and comfort rating scale, Barthel Index for activities of daily living, assessment for the presence of vascular complications, modified CADEQ-SV questionnaire, State-Trait Anxiety Inventory (STAI) scale, self-structured satisfaction scale with “PCI care program,” or routine care. Patient pro forma further included sociodemographic profile, clinical profile, and personal profile. Numerical rating scale adopted from McCaffery and Beebe \textit{et al}. (1989) indicates the intensity of current, best, and worst pain levels over the past 24 h on a scale of 0 (no pain) to 10 (worst pain imaginable). Numerical comfort rating scale indicates the intensity of current, best, and worst pain levels over the past 24 h on a scale of 0 (no comfort) to 10 (highest level of comfort). The Barthel Index for activities of daily living was used as a record of what a patient does and not as a record of what a patient could do. It includes ten components that are feeding, bathing, grooming, dressing, bowels, bladder, toilet use, transfer, mobility, and stairs. The modified CADE-Q was used to assess the knowledge of patients related to CAD; the CADE-Q was developed which includes knowledge of five domains of CAD – medical condition, risk factors, exercise, nutrition, and psychosocial factors. Based on the CADE-Q (the first version), the CADE-Q-SV was developed. From the CADE-QSV, the modified CADE-Q SV was developed which includes knowledge related to PCI. The modified CADE-QSV has designed to be a true/false/I do not know questionnaire, with 23 items. Each correct answer is equal to 1 point; therefore, the maximum score possible is 23. STAI is a psychological inventory consisting of forty self-report items about anxiety affect. It measures anxiety at both extremes of the normal affect curve (state vs. trait).

Self-structured satisfaction scale includes 25 items and each item has 5-point Likert scale. The score for each item ranged from 1 (very dissatisfied) to 5 (very satisfied). Hence, the overall minimum score is 25 and maximum score is 125.

**Data analysis**

The effectiveness of “PCI care program” was assessed by conducting statistical analysis of data by SPSS (IBM SPSS Statistics, version 20, USA). The data were presented as mean ± standard deviation. The analyses conducted for the present study included descriptive statistics, and inferential statistics. Descriptive statistics included frequency and percentage, mean, and standard deviation. Inferential statistics included paired t-test and independent t-test.**
statistics for windows, version 20.0. Armonk, NY) and Microsoft Excel 2010 of (Microsoft Corporation, Redmond, Washington, USA). Descriptive statistics (%age, mean, standard deviation, median, and Chi-square) and inferential statistics (t-test and Friedman) were used to analyze the data of patients and to find an association. The analyzed data were presented in the form of tables, graphs, and figures.

Results

There was no significant difference observed in parameters of sociodemographic profile, except the type of family in patients of control and experimental groups. The mean age was comparable in the control (55.86 ± 11.03) and experimental groups (55.70 ± 13.04). Most of the patients in the control (84%) and experimental groups (74%) were male. Majority of the patients in the control (76%) and experimental groups (54%) had joint family. More than half of the patients in the control (68%) and experimental groups (64%) were from rural area. Less than half (46%) of the patients in the control and More than one forth (26%) in the experimental groups had low socioeconomic status. Half (50%) of the patients in the control and less than half (46%) of the patients in the experimental groups were mild worker. More than half (54%) of the patients in the control and half (50%) of the patients in the experimental groups were nonvegetarian. Majority (46%) of the patients in the control and (52%) in experimental group were nonalcoholics. More than three-fifth (68%) of the patients in the control and three-fifth (60%) of the patients in the experimental groups were nonsmoker.

Table 1 depicts the comparison of clinical profile of control and experimental groups undergoing PCI. Majority

| Characteristics                      | Control group (n=50), f (%) | Experimental group (n=50), f (%) | \(\chi^2\) (df) | P       |
|-------------------------------------|-----------------------------|---------------------------------|----------------|---------|
| Clinical diagnosis                  |                             |                                 |                |         |
| CAD/ACS/MI                          | 31 (62.0)                   | 27 (54.0)                       | 4.72 (3)       | 0.91*   |
| CAD/ACS/USA                         | 12 (24.0)                   | 19 (38.0)                       |                |         |
| CAD/DVD                             | 2 (4.0)                     | 3 (6.0)                         |                |         |
| CAD/TVD                             | 5 (10.0)                    | 1 (2.0)                         |                |         |
| Route of angioplasty                |                             |                                 |                |         |
| Radial                              | 26 (52.0)                   | 33 (66.0)                       | 2.03 (2)       | 0.36*   |
| Femoral                             | 21 (42.0)                   | 15 (30.0)                       |                |         |
| Both                                | 3 (6.0)                     | 2 (4.0)                         |                |         |
| BMI                                 |                             |                                 |                |         |
| Normal                              | 29 (58.0)                   | 20 (40.0)                       | 3.25 (2)       | 0.19*   |
| Overweight                          | 17 (34.0)                   | 24 (48.0)                       |                |         |
| Obese                               | 4 (8.0)                     | 6 (12.0)                        |                |         |
| Hb                                  |                             |                                 |                |         |
| Normal                              | 38 (76.0)                   | 32 (64.0)                       | 2.84 (2)       | 0.24*   |
| Mild anemia                         | 3 (6.0)                     | 8 (16.0)                        |                |         |
| Moderate anemia                     | 9 (18.0)                    | 10 (20.0)                       |                |         |
| History of previous angiography     |                             |                                 |                |         |
| Yes                                 | 19 (38.0)                   | 20 (40.0)                       | 0.04 (1)       | 0.84    |
| No                                  | 31 (62.0)                   | 30 (60.0)                       |                |         |
| Any other illness present           |                             |                                 |                |         |
| Hypertension                        |                             |                                 |                |         |
| Yes                                 | 18 (36.0)                   | 24 (48.0)                       | 1.48 (1)       | 0.22    |
| No                                  | 32 (64.0)                   | 26 (52.0)                       |                |         |
| Back pain before angiography        |                             |                                 |                |         |
| Yes                                 | 12 (24.0)                   | 15 (30.0)                       | 0.46 (1)       | 0.49    |
| No                                  | 38 (76.0)                   | 35 (70.0)                       |                |         |
| Diabetes mellitus                   |                             |                                 |                |         |
| Yes                                 | 15 (30.0)                   | 12 (24.0)                       | 0.46 (1)       | 0.49    |
| No                                  | 35 (70.0)                   | 38 (76.0)                       |                |         |
| Heart attack                        |                             |                                 |                |         |
| Yes                                 | 9 (18.0)                    | 11 (22.0)                       | 0.25 (1)       | 0.62    |
| No                                  | 41 (82.0)                   | 39 (78.0)                       |                |         |

*Yate’s corrected \(\chi^2\). Hb - Hemoglobin, BMI - Body mass index, CAD - Coronary artery disease, ACS - Acute coronary syndromes, MI - Myocardial infarction, TVD - Triple vessel disease DVD - Double vessel disease
of the patients in the control (62%) and experimental groups (54%) had CAD/acute coronary syndrome/myocardial infarction (MI) clinical diagnosis ($P = 0.91$). There was no significant difference between the control and experimental groups in parameters such as route of angioplasty, history of previous angiography, body mass index ($P = 0.19$), and the presence of any other illness.

The baseline data of laboratory investigations of control and experimental groups undergoing PCI are shown in Table 2. The independent $t$-test showed that both the groups are homogenous and comparable as per the laboratory investigations.

Table 3 depicts the comparison of level of anxiety between patients of control and experimental groups undergoing PCI before and after intervention using STAI scale. There was no significant difference in state anxiety between control and experimental groups before intervention ($P = 0.58$). The mean of state score was 42.86 ± 5.97 in the control group and 36.54 ± 5.97 in the experimental group after intervention. There was a significant difference in state anxiety between control and experimental groups after intervention ($P < 0.001$).

Table 2: Baseline data of laboratory investigations of control and experimental group undergoing percutaneous coronary intervention ($n = 100$)

| Lab investigations | Control group | Mean±SD (range) | Experimental group | Mean±SD (range) | $t$ (df) | $P$ |
|--------------------|---------------|-----------------|--------------------|-----------------|---------|-----|
| Hb (g/dl)          | 12.95±2.02 (9.2–18.2) | 12.55±1.56 (9.8–16.8) | 1.12 (98) | 0.26 |
| Platelet count ($\times 10^3$/µL) | 191.34±63.67 (71–359) | 211.70±78.17 (75–433) | −1.43 (98) | 0.16 |
| Sodium (mEq/L)     | 138.16±6.59 (121–152) | 136.26±4.00 (125–142) | 1.74 (98) | 0.86 |
| Potassium (mEq/L)  | 4.37±0.51 (4–6) | 4.88±0.37 (3–5) | −0.83 (98) | 0.41 |
| BUN (mg/dl)        | 34.46±19.51 (6–99) | 29.83±11.11 (9–65) | 1.46 (98) | 0.15 |
| Creatinine (mg/dl) | 0.94±0.30 (0.40–1.90) | 0.88±0.19 (0.5–1.40) | 1.05 (98) | 0.29 |
| PT (s)             | 15.76±3.185 (10–29) | 15.20±2.5 (12–27) | 0.97 (98) | 0.33 |
| INR                | 1.04±0.12 (0.89–1.63) | 1.08±0.15 (0.90–1.84) | −1.19 (98) | 0.23 |
| aPTT (s)           | 30.24±7.76 (2–68) | 28.70±3.37 (16–40) | 1.29 (98) | 0.20 |
| RBS (mg/dl)        | 147.36±64.50 (85–346) | 132.54±39.88 (70–306) | 1.38 (98) | 0.17 |

RBS - Red blood cell, aPTT - Activated partial thromboplastin time, PT - Prothrombin time, INR - International normalized ratio, BUN - Blood urea nitrogen, Hb - Hemoglobin, SD - Standard deviation

Table 3: Comparison of level of anxiety between subjects of control and experimental group undergoing percutaneous coronary intervention before and after intervention using State-Trait Anxiety Inventory scale ($n = 100$)

| State anxiety score | Control group ($n=50$) | Mean±SD (range) | Experimental group ($n=50$) | Mean±SD (range) | $t$ (df) | $P$ |
|--------------------|-------------------------|-----------------|-----------------------------|-----------------|---------|-----|
| Before intervention| 43.64±5.79 (35–60) | 44.28±5.08 (36–56) | 0.59 (98) | 0.58 |
| After intervention | 42.86±5.97 (34–59) | 36.54±5.97 (26–53) | 5.29 (98) | <0.001 |

SD - Standard deviation
of PCI. In the experimental group, bleeding, ecchymosis, and superficial hematoma developed in 1 patient within 24 h of PCI. No late complication was observed in both the groups.

Table 4 depicts the comparison of activities of daily living before and after PCI between control and experimental groups using Barthel Index scale. A significant difference was observed between the mean Barthel Index scores of control and experimental groups at day 0 ($P = 0.002$), day 1 ($P < 0.001$), and day 30 ($P = 0.004$). This indicates that independence of performing activities of daily living was increased in the experimental group after intervention as compared to the control group.

Table 5 shows the comparison of postintervention knowledge regarding CAD and PCI between control and experimental groups using the modified CADE-QSV scale. There was a significant difference between the mean of modified CADE-QSV scores after intervention in the control ($33.84 \pm 9.31$) and experimental groups ($61.32 \pm 3.44$). This is suggestive of higher knowledge level in the experimental group as compared to the control group after intervention ($P < 0.001$).

Table 6 depicts the comparison of satisfaction level of patients within and between control and experimental groups. There was no significant difference in the mean of satisfaction score in the experimental and control groups before intervention ($P = 0.34$). Therefore, both the groups are comparable. However, there was a significant difference within satisfaction score of control and experimental groups before and after intervention, but there was a highly significant difference between the mean of satisfaction score in the control and experimental groups ($P < 0.001$). This is suggestive of higher satisfaction level in the experimental group as compared to the control group.

**Discussion**

CAD is the topmost killer disease globally.[1] In the present study, the mean age of patients in both the groups was 55 years. These findings were similar to a previous study in which the average age was 54.48 ± 12.91 years of the patients underwent angiography.[3] Hence, this finding was congruent with the literature that CAD is common in the middle age group. A retrospective study reported

| Table 4: Comparison of activities of daily living before and after percutaneous coronary intervention between control and experimental group using Barthel index scale (n=100) |
|---------------------------------------------------------------|
| **Barthel index ADL score** | **Mean±SD (range)** | **t (df) P** |
| Control group ($n_1=50$) | Experimental group ($n_2=50$) |  |
| Before PCI ADL score | 19.48±1.83 (10–20) | 18.72±3.93 (2–20) | 1.237 (88) 0.219 |
| After PCI (score) | Day 0 | 6.04±2.89 (2–13) | 8.08±3.47 (3–13) | 3.191 (88) 0.002 |
| | Day 1 | 11.30±4.18 (5–19) | 15.42±3.59 (4–20) | 5.28 (88) 0.001 |
| | Day 2 | 17.36±1.98 (7–20) | 17.46±2.93 (5–20) | 0.20 (88) 0.84 |
| | Day 30 | 19.44±0.86 (18–20) | 19.86±0.49 (18–20) | 2.99 (88) 0.004 |

**Maximum attainable score=0–20. SD ‑ Standard deviation, PCI ‑ Percutaneous coronary intervention, ADL ‑ Activities of daily living**

| Table 5: Comparison of postintervention knowledge regarding coronary artery disease and percutaneous coronary intervention between control and experimental group using modified Coronary Artery Disease Education Questionnaire ‑ Short Version scale (n=100) |
|---------------------------------------------------------------|
| **Knowledge*** | **Control group ($n_1=50$, f (%))** | **Experimental group ($n_2=50$, f (%))** | **Fisher exact value (df) P** |
| Poor | 17 (34.0) | – |  |
| Average | 26 (52.0) | – | 103.43 (3) <0.001† |
| Good | 7 (14.0) | 11 (22.0) |  |
| Very good | – | 39 (78.0) |  |

*Mean±SD knowledge of patients, Control group 33.84±9.31 and experimental group 61.32±3.44, †Fisher exact test, Maximum attainable score=0–23. SD ‑ Standard deviation

| Table 6: Comparison of satisfaction level of patients within and between subjects of control and experimental group (n=100) |
|---------------------------------------------------------------|
| **Satisfaction score** | **Control group ($n_1=50$) (comparison within group)** | **Experimental group ($n_2=50$) (comparison within group)** | **Comparison between control and experimental group, t-test (df) P** |
| Mean±SD | Mean difference±SD, t-test (df) P | Mean±SD | Mean difference±SD, t-test (df) P |  |
| Before PCI | 66.84±6.29 (55–89) | 2.96±3.57, 5.86 (49) 0.01 | 65.78±4.64 (60–83) | 40.22±7.39, 38.49 (49) <0.001 |
| After PCI | 69.80±5.79 (61–83) | – | 106.00±6.09 (89–116) | 0.96 (98) 0.340 |

*Maximum attainable score=5–125. PCI ‑ Percutaneous coronary intervention, SD ‑ Standard deviation
the occurrence of MI (12%–16%) in the young age group.\(^\text{[6]}\)
Similarly, in this study, 8% of the patients in the control group and 12% in the experimental group were in the age group of 18–40 years. This may be associated with increased smoking, poor dietary habits, and insufficient physical activity in the younger generation.

In the present study, most of the patients were male. Similarly, the results of a previous study showed that more than half of the patients were male.\(^\text{[9]}\) This can be due to the increased prevalence of smoking and alcohol consumption in males than females in the Indian population.

A study conducted in Kerala did not show any difference in the CAD prevalence in urban and rural population.\(^\text{[7]}\) In the present study, more than half of the patients belonged to rural area. The reason for this can be the unavailability of hospital and catheterization laboratory settings in rural areas, less access to health-care facilities, ignorance to earlier symptoms of CAD, not enough money for treatment, and less knowledge about CAD and its risk factors. Similarly, a study was conducted in the USA, which shows the higher mortality in the rural population as compared to the urban population in southern regions.\(^\text{[8]}\)

On the other hand, based on the finding of this study, it can be said that people residing in the urban area might be availing the services from other health-care institutes or private hospitals.

In the present study, it was found that more than half of the patients with CAD were from lower middle and lower class of socioeconomic status (as per the modified B.G Prasad scale\(^\text{[9]}\)). It may be due to the provision of free facilities and government services to the patients of low socioeconomic class in the hospital. Similarly, a previous study showed that coronary heart disease was found to be higher among people of lower socioeconomic status.\(^\text{[10]}\)

This study showed that radial approach was used in 59 patients. Similarly, in 2004, a meta-analysis of 12 randomized control trials concluded that the transradial approach was a safe alternative to femoral access for diagnostic and therapeutic procedures.\(^\text{[11]}\) This may be due to the reason that radial access has the potential advantages of reduced access site complications, rapid patient mobilization, and reduced costs.

Many patients undergoing PCI experience symptoms of anxiety. The present study revealed that majority of the patients had a moderate level of state anxiety in patients of both groups before intervention. After intervention, more than half of the patients had a moderate level of state anxiety in the control group whereas majority of the patients had a mild level of anxiety in the experimental group. This significant difference in the mean state anxiety score of the patients showed that the educational component of “PCI care program” was effective in reducing the anxiety among PCI patients. The results of a previous study showed that before PCI procedure, VAS anxiety scores were highest and concluded that better preprocedural information or pharmacological strategies may reduce anxiety in these patients.\(^\text{[12]}\)

In this study, it was noted that pain at the interventional site of PCI was less at 12 h in patients of experimental group as compared to the patients of control group. The present study also found that pain at the puncture site was significantly reduced in both the groups at different intervals of time (6 h, 12 h, and 24 h). Similarly, a previous study conducted by Cheng et al. showed that the level of puncture site pain at 24 h was significantly \((P < 0.001)\) lower than that at 3 h after procedure.\(^\text{[13]}\)

In the present study, it was observed that comfort level was higher in the experimental group than the control group after intervention within 12 and 24 h of PCI. This result was supported by a randomized control trial done by Rezaei et al. to assess the effect of changing position and early ambulation on patient’s level of comfort, and the authors concluded that longer duration in bed after PCI showed a lower level of comfort.\(^\text{[14]}\)

The patients may experience vascular complications after PCI.\(^\text{[15,16]}\) In literature, it was found that transradial approach leads to less vascular complications as compared to femoral approach.\(^\text{[14,16]}\) This study showed that four patients had bleeding in the control group and no other vascular complication was found after PCI within 24 h. Bleeding in the patients of control group may be present due to lack of knowledge about care or position provided to them after PCI or ignorance of patients to instructions given by health-care providers to them. In the experimental group, one patient had bleeding, ecchymosis, and superficial hematoma after PCI within 24 h. However, these vascular complications in the patients of experimental group were not due to early embalulation. It emphasized that early ambulation and position changed was safe to the patients. Similarly, the results of a previous study showed that the incidence of vascular complication in early ambulation group was not significant to late ambulation group \((P = 0.442)\) and concluded that reducing
bed rest to 4 h or early ambulation after PCI was safe to the patients.\textsuperscript{16}

In this study, no significant difference was observed in performing activities of daily living among the patients of both the groups before PCI ($P = 0.219$). After PCI, independence in performing self-care activities was higher in the experimental group as reflected by the mean Barthel Index score at day 0, day 1, and day 30. It indicates that the components of this program such as demonstration, teaching, assistance, and guidance were effective in terms of making patient independent to perform their self-care activities after PCI during hospitalization. These findings of the study also focused on the need of continuous and supportive nursing care for the patients undergoing PCI, so that most of the patients can achieve independence in performing self-care activities. There is a paucity of hospital-based study to evaluate the effect of nursing interventions in the activities of PCI patients during hospitalization. A home-based study supported the findings of the present study. The results of this home-based study indicated a significant increase in daily physical activities of the intervention group whereas no changes were detected in the control group.\textsuperscript{17}

The present study showed a significant improvement in knowledge of patients of experimental group during the postinterventional period. Based on this finding, it can be stated that “PCI care program” was effective in terms of increasing knowledge of the patients undergoing PCI related to CAD and PCI. Similarly, a study conducted by Chair et al. on knowledge of patients showed that there was a significant difference between the patients’ knowledge before and after the teaching program before PCI procedure ($t = 28.9$, $P < 0.001$) and concluded that a preoperative teaching program would increase patients’ knowledge of the PCI procedure.\textsuperscript{18}

In the present study, a significant difference was observed between the mean satisfaction score in the control and experimental groups ($P < 0.001$). In previous studies, patients undergoing PCI procedure had a higher level of satisfaction due to teaching program, early ambulation, and early discharge from the hospital after PCI.\textsuperscript{14,16,18} Hence, it can be said that nurses has to take a lead role in identifying and meeting the informational needs of patients undergoing PCI by implementing “PCI care program” as a routine part of nursing care.

Implementation of the PCI care program resulted in reduced anxiety, level of pain, and discomfort; increased satisfaction level and knowledge; and improvement in performing activities of daily living without any vascular complication. The study concluded that this program was effective in terms of enhancing the image of nursing profession as well as institute. In the light of the findings of the present study, PCI care program of this research will help nurses in cardiac units for educating the patients about CAD and providing care before, during, and after PCI.

**Conclusion**

This study has shown improvement in various aspects of the patients undergoing PCI such as anxiety, activities of daily living, knowledge regarding CAD, comfort level, and satisfaction level by implementation of “PCI care program.” Therefore, this study is beneficial to the patients undergoing PCI.

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**Conflicts of interest**

There are no conflicts of interest.

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