CHAPTER V
DISCUSSION

Surgery is often an acute crisis for an individual with chronic or acute illnesses. The psychological status of patients after major surgical procedures is often altered. Pain which was one of the main clinical manifestations experienced by the patients during pre-operative period was prevalent in the post-operative period also. Reduction of pain and maintenance of the psychological status was very crucial in order to improve the post-operative outcome, general well-being and the quality life of the individual. So the investigator provided Reiki therapy, which is therapeutic healing by hands to the study participants who underwent major surgical procedures.

Patients subjected to major surgical procedures such as laparotomy, cholecystectomy, hernia repair, hysterectomy and mastectomy were selected as the participants for the study. The majority of the background variables were not having any significant difference between study and control groups except for educational qualification, occupation and type of family; it may be due to the randomization done to allot the samples. However, it showed homogeneity in samples and it helped to compare the outcome measures.

The data reported that most of the study participants, 82 (46.86%) in the study group and 85 (46.86%) of them were in the age group of 31-40 years. 89 (50.86%) patients in the study group and 87 (49.71%) in the control group were male and 86 (49.14%) in the study group and 88 (50.29%) in the control group were females. With respect to the place of residence most of the patients 113 (64.51%) in the study group and 106 (60.57%) in the control group were from urban area.
Educational qualification of the patients revealed that 9 (8.1%) in the study group and 34 (19.43%) in the control group had no formal education, 32 (18.3%) in the study group and 40 (53.33%) in the control group had primary education and 39 (22.3%) in the study group and 27 (15.43%) in the control group had collegiate education. The occupational status of patients highlighted that 78 (44.57%) in the study group and 85 (48.57%) patients in the control group were either homemaker or unemployed. 37 (21.14%) patients in the study group and 24 (13.71%) in the control group were professionals.

Considering the type of family, most of the patients, 81 (46.29%) in the study group and 92 (52.57%) in the control group were from the nuclear family. With regard to the marital status 107 (61.1%) in the study group and 101 (57.71%) in the control group were married and living with spouse. Considering the socio economic status of the study participants revealed that, 81 (46.29%) patients in the study group and 77 (44%) in the control group had total family monthly income of Rs 15001 to 20000. Most of the patients, 97 (55.43%) in the study group and 101 (57.72%) in the control group bore the medical expense by themselves.

With regard to the social support in the study group, 28 (16%) were supported by parents, 23 (13.1%) by siblings, 67 (38.3%) by spouse, 43 (24.6%) by friends and others and 14 (8%) had no one to support, whereas in the control group, 33 (18.86%) were supported by parents, 23 (13.14%) by siblings, 41 (23.43%) by spouse, 23 (13.14%) by friends and others and 55 (31.43%) had no one to support. 76 (43.43%) patients’ family in the study group and 69 (39.43%) in the control group were dependent on the patient.

Regarding the type of surgery, 47 (26.86%) patients in the study group, and 50 (28.57%) in the control group underwent laparotomy, 56 (32%) in the study group and 54 (30.86%) had
hysterectomy and 30 (17.14%) in the study group and 37 (21.14%) in the control group underwent cholecystectomy. 7 (4%) patients in the study group and 6 (3.43%) in the control group underwent mastectomy and 35 (20%) in the study group and 28 (16%) in the control group had hernia repair. The effectiveness of Reiki therapy on biophysiological status, anxiety and depression among the study participants subjected to major surgical procedures were determined and discussed in this chapter based on the objectives, as discussion of research findings has the potential to streamline and rationalize the research outcome into practice.

The first objective of the study was to determine the effectiveness of Reiki therapy on biophysiological status among patients subjected to major surgical procedures.

Temperature, pulse, respiration, systolic and diastolic blood pressure and pain were monitored in the present study in order to maintain the biophysiological status of the study participants.

Reiki therapy on temperature

During the pre assessment of the present study it was found that 48 (27.43%) patients in the study group and 40 (22.86%) in the control group had hyperthermia on the first day, whereas on day seventh day all the patients 175 (100%) in the study and control groups had normal temperature (Table 6). During the post assessment, on the first day, 15 (8.57%) patients in the study group and 14 (8%) in the control group had hyperthermia and on day two, 11 (6.29%) patients in the study group and 15 (8.57%) in the control group were hyperthermic, whereas on day seven, all the patients 175 (100%) in the study and control groups had normal temperature.

The present study result was well supported by the research conducted by Richard Lesperance, Ryan Lehman, Kelly Lesperance, Daniel Cronk and Matthew Martin in 2011. They evaluated
the incidence and utility of extensive post-operative fever evaluations in a teaching hospital setting. Prospective observational study of all the adult patients undergoing in-patient general surgical procedures during a 13 months period was done. Of 1032 surgical procedures, 245 (23.7%) patients experienced an early postoperative fever. One hundred patients (9.7%) underwent documented fever evaluation. 35 (35%) had blood cultures with no positive results among elective surgery patients. 46 patients (46%) had urine culture sent, of which four infections were diagnosed (8.9%). 50 chest radiographs were performed, but the diagnosis of pneumonia was made by only three (6.0%). Ultimately, 18 febrile patients (18%) were diagnosed with an infectious source, in nine of these patients the physical exam and clinical picture accurately diagnosed the infection without any need for further testing.

In the present study table 8 highlighted the mean difference between the study and control groups during the pre and post assessment of temperature. It was identified that during pre and post assessment of temperature there were no significant mean difference between the study and control group from day 1 to day 7. Hence the corresponding hypothesis “there will be a significant change in temperature of patients who receive Reiki therapy than who do not” was rejected.

**Reiki therapy on pulse rate**

With respect to pulse rate, during pre assessment, in the study group, 134 (76.57%), 124 (70.86%), 82 (46.85%), 60 (34.29%), 42 (24%), 29 (16.57%) and 19 (10.86%) patients had tachycardia during pre assessment on day 1, day 2, day 3, day 4, day 5, day 6 and day 7 respectively, whereas in the control group, 139 (79.43%), 132 (75.43%), 98 (56%), 82 (46.86%), 76 (43.43%), 68 (38.86%) and 69 (39.43%) patients had tachycardia during pre assessment on
day 1, day 2, day 3, day 4, day 5, day 6 and day 7 respectively. During post assessment, on day 1, 48 (27.43%) patients in the study group and 132 (75.43%) in the control group had tachycardia, whereas on day 7 during post assessment, one (0.57%) patient in the study group and 35 (20%) in the control group had tachycardia.

Table 12 reveals the independent t and p value between the study and control groups during pre and post assessment of pulse rate for seven post operative days. During the pre assessment, a significant mean difference was observed between the study and control groups on day 3 (p=0.022), day 4 (p=0.003), day 5, day 6 and day 7 at p=0.000 level. During the post assessment, a significant mean difference was observed between the study and control groups from day 1 to day 7 at p=0.000 level. Hence the corresponding hypothesis, “there will be a significant change in pulse rate of patients who receive Reiki therapy than who do not” was accepted.

Reiki therapy on respiratory rate

With regard to the assessment of respiratory rate, in the present study, during pre assessment in the study, 85 (48.57%), 61 (34.9%), 30 (17.14%), 18 (10.29%), 10 (5.71%), 1 (0.57%) and 2 (1.14%) patients had tachypnoea during pre assessment on day 1, day 2, day 3, day 4, day 5, day 6 and day 7 respectively, whereas in the control group, 82 (46.86%), 76 (43.43%), 59 (33.71%), 58 (33.14%), 57 (32.57%), 43 (24.57%) and 43 (24.57%) patients had tachypnoea during pre assessment on day 1, day 2, day 3, day 4, day 5, day 6 and day 7 respectively(Table 14). Table 15 describes the frequency and percentage of respiration rate during post assessment in the study and control groups. With regard to the study group two (1.14%) patients on day 1 and one (0.57%) on day 7 had tachypnoea during post assessment. In the control group, 73 (41.71%) patients on day 1 and 30 (17.14%) on day 7 had tachypnoea. During pre assessment,
independent t value was significant on day 2 (p=0.025), day 3 (p=0.018) and for day 4, day 5, day 6 and day 7 at p= 0.000. During post assessment significant mean difference was observed between the study and control groups on all seven days at p=0.000 level.

The present study was supported by Arie Shapiro, Edna Zohar, Ruth Zaslansky, David Hoppenstein, Shay Shabat, and Brian Fredman (2005). Hence the corresponding hypothesis, “there will be a significant change in respiration rate of patients who receive Reiki therapy than who do not” was accepted.

Reiki therapy on blood pressure

Considering the systolic blood pressure, table 18 highlighted that 46 (26.28%) patients in the study group and 44 (25.14%) in the control group had mild hypertension on day 1, 42 (24%) patients in the study and control groups on day 2 and it was 25 (14.28%) patients in the study group and 36 (20.57%) in the control group had mild hypertension on day 3. 12 (6.85%) patients in the study group and 34 (19.43%) in the control group on day 4, 8 (4.57%) patients in the study group and 30 (17.14%) in the control group on day 5, 2 (1.14%) patients in the study group and 32 (18.28%) in the control group on day 6 and 3 (1.71%) patients in the study group and 30 (17.14%) in the control group had mild hypertension on day 7. Table 19 illustrated the frequency and percentage distribution of diastolic blood pressure during post assessment in the study and control groups. In the study group, 24 (13.71%) patients on day 1, 18 (10.28%) on day 2, 8 (4.57%) on day 3, 4 (2.28%) on day 4 and 2 (1.14%) on day 5 had mild hypertension during post assessment. In the control group, 44 (25.14%) patients on day 1, 42 (24%) on day 2, 34 (19.43%) on day 3, 29 (16.57%) on day 4, 29 (16.57%) on day 5, 30 (17.14%) on day 6 and 30 (17.14%) on day 7 had mild hypertension during post assessment.
During the pre assessment of systolic blood pressure, a significant mean difference was observed between the study and control groups on day 5 (p=0.023) and on day 6 (p=0.049). During the post assessment, a significant mean difference was observed between the study and control groups on day 1, and day 3 at p<0.05 level, on day 2 and day 4 at p< 0.001 level and on day 5, day6 and day 7 at p=0.000 level.

Determination of the diastolic blood pressure revealed that during pre assessment mild hypertension was present on day 1 in 71 (40.57%) patients in the study group and 68 (38.85%) patients in the control group. On day 7, 24 (13.71%) patients in the study group and 50 (28.57%) in the control group had mild hypertension. During post assessment mild hypertension was present on day 1 in 53 (30.28%) patients in the study group and 68 (38.85%) patients in the control group. On day 7, 16 (9.14%) patients in the study group and 50 (28.57%) in the control group had mild hypertension. During the pre assessment of diastolic blood pressure, a significant mean difference was observed between the study and control groups on day 6 (p=0.049). During the post assessment, a significant mean difference was observed between the study and control groups on day 1, day 2 and day 4 at p<0.05 level, on day 3 and day 5 at p< 0.001 level and on day 6 and day 7 at p=0.000 level.

The present study was supported by Thomas J. Gal and Lee H. Cooperman (1975), who assessed hypertension in the immediate postoperative period. 60 patients out of 1,844 recovery room admissions had significant post-operative arterial hypertension. Nearly 60% of them had a history of hypertension. The post-operative hypertension usually began within 30 minutes from the end of the operation and lasted for about 2 hours. In 20% of the patients it lasted for about three hours or longer. Complications attributable to hypertension were confined to this latter group. The principal factors possibly contributing to the pressure elevations were pain (35%),
hypercarbia (15%) and emergence excitement (16%). Ten of the patients (17%) had no demonstrable cause for hypertension. The hypertension in this group appeared to have a shorter and more benign course.

The corresponding hypothesis, “there will be a significant change in blood pressure of patients who receive Reiki therapy than who do not” was accepted.

**Reiki therapy on pain**

Table 28 compares the mean and standard deviation of the pain scores between the study and control groups during pre and post assessment. A high statistical significant difference in the mean scores was identified during post assessment between the study and the control groups at p=0.000. The results of the present study was supported by Jeffery, (2003) who assessed patients’ post-operative pain experience and the status of acute pain management among 250 adults who had undergone surgical procedures in the United States, through National Family Opinion. Approximately 80% of the patients experienced acute pain after surgery. Of these patients, 86% had moderate, severe, or extreme pain, with more patients experiencing pain after discharge than before discharge. Experiencing post-operative pain was the most common concern (59%) of the patients. Almost 25% of the patients who received pain medications experienced adverse effects. Despite an increased focus on pain management programs and the development of new standards for pain management, many patients continue to experience intense pain after surgery. Hence the corresponding hypothesis, “there will be a significant change in pain score of patients who receive Reiki therapy than who do not” was accepted.

The study findings were well supported by the research conducted by Karin Olson, John Hanson, and Mary Michaud (2003). The researchers compared pain, quality of life, and analgesic use in a
sample of patients with cancer pain (n = 24) who received either standard opioid management plus rest (arm A) or standard opioid management plus Reiki (arm B) in Canada. Participants either rested for 1.5 hr on days 1 and 4 or received two Reiki treatments (days 1 and 4) one hour after their first afternoon analgesic dose. Visual analogue scale (VAS) pain ratings, blood pressure, heart rate, and respirations were obtained before and after each treatment/rest period. Analgesic use and VAS pain scores were reported for 7 days. Quality of life was assessed on days 1 and 7. Participants in arm B experienced improved pain control on days 1 and 4 following treatment, compared to arm A, and improved quality of life.

The second objective of the study was to elicit the effectiveness of Reiki therapy on level of anxiety among patients subjected to major surgical procedures.

The level of state anxiety measured during pretest in the study group showed that 38 (21.71%) patients had mild anxiety and 90 (51.43%) had moderate anxiety. During posttest I, most 100 (57.14%) of the patients and during posttest II, 50 (28.57%) had mild anxiety. With regard to posttest III, 39 (22.54%) had mild anxiety and majority 133 (76.88%) of the patients were normal. In the control group during pretest, 39 (22.29%) patients had mild anxiety and 92 (52.57%) had moderate anxiety. 78 (44.57%) patients had moderate anxiety during posttest I and posttest II with 45.08%. With regard to posttest III, 73 (43.45%) patients had moderate anxiety, 23 (13.69%) had mild anxiety and 72 (42.86%) of the patients were normal (Table 30). Table 31 showed that there was significant reduction in the mean state anxiety among patients subjected to major surgical procedures in the study and control groups. Significant difference in the mean state anxiety was observed during posttest I, posttest II and posttest III at p=0.000 level.
With respect to trait anxiety, in the study group during pretest, 33 (18.86%) patients had mild anxiety and 95 (54.28%) had moderate anxiety. During posttest I, most 103 (58.86%) of the patients and during posttest II, 56 (32%) patients had mild anxiety. With regard to posttest III, 47 (27.16%) had mild anxiety and majority 125 (75.25%) of the patients were normal. In the control group during pretest, 33 (18.86%) patients had mild anxiety and 97 (55.43%) had moderate anxiety. 80 (45.72%) patients had moderate anxiety during posttest I and during posttest II, 75 (43.35%) patients had moderate anxiety. With regard to posttest III, 73 (43.45%) patients had moderate anxiety, 24 (12.16%) had mild anxiety and 71 (42.26%) of the patients were normal (Table 33). Table 34 explored that there was significant reduction in the mean trait anxiety among patients subjected to major surgical procedures in the study and control groups. A highly significant reduction in the mean trait anxiety between study and control group was identified during posttest I, posttest II and posttest III at p=0.000 level.

The results of the present study was well supported by the research conducted by Kathy, Linda E. Carlson, and Karin Olson, (2007) examined the effects of Reiki, as a type of energy touch therapy, on fatigue, pain, anxiety, and overall quality of life in Canada. Participants received Reiki for 5 consecutive days, followed by a 1-week washout monitoring period of no treatments, then 2 additional Reiki sessions, and finally 2 weeks of no treatments, and in the rest condition, participants rested for approximately 1 hour each day for 5 consecutive days, followed by a 1-week washout monitoring period of no scheduled resting and an additional week of no treatments. Sixteen patients (13 women) participated in the trial: 8 were randomized to each order of conditions (Reiki then rest; rest then Reiki). Fatigue decreased within the Reiki condition (P=0.05) over the course of all 7 treatments. In addition, participants in the Reiki condition experienced significant improvements in quality of life compared to those in the
resting condition (p <0.05). On daily assessments in the Reiki condition, pre-sessions 1 versus post-sessions 5 scores indicated significant decreases in tiredness (p <0.001), pain (p<0.005), and anxiety (p<0.01), which were not seen in the resting condition.

Hence, the corresponding hypothesis is that there will be a significant change in the level of anxiety of patients who receive Reiki therapy than who do not was accepted.

**The third objective of the study was to identify the effectiveness of Reiki therapy on the level of depression among patients subjected to major surgical procedures.**

In the present study, Table 36 showed that during pretest, 33 (18.86%) of the patients in the study group and 30 (17.14%) in the control group had mild depression and 32 (18.29%) patients in the study group and 38 (21.72%) in the control group had moderate depression. With regard to posttest I, 26 (14.86%) patients in the study group and 44 (25.14%) in the control group had mild depression. During posttest II, 3 (1.72%) of the patients in the study group and 42 (24.28%) had moderate depression. 164 (94.79%) patients in the study group and 91 (54.17%) in the control group were normal during posttest III.

Table 37 identified that there is a significant reduction in the mean depression among patients subjected to major surgical procedures in the study and control groups. During pretest, the mean depression score was 20.47 in the study group and 21.11 in the control group. A highly significant reduction in the mean depression between the study and control groups were identified during posttest I, II and III at p=0.000 level.

The result of the present study was well supported by Deborah Bowden, Lorna Goddard, and John Gruzelier (2011), conducted a randomised controlled single-blind trial on the
efficacy of Reiki in benefitting mood and well-being. 40 university students, half with high depression and/or anxiety and half with low depression and/or anxiety were randomly assigned to receive Reiki or to a non-Reiki control group. Participants experienced six 30-minute sessions over a period of two to eight weeks, where they were blind to whether noncontact Reiki was administered as their attention was absorbed in a guided relaxation. The participants with high anxiety and/or depression who received Reiki showed a progressive improvement in overall mood, which was significantly better at five-week follow-up, while no change was seen in the controls. Hence the corresponding hypothesis, “there will be a significant change in the level of depression of patients who receive Reiki therapy than who do not” was accepted.

The fourth objective of the study was to correlate between biophysiological status, anxiety and depression among patients subjected to major surgical procedures.

In the present study a significant positive correlation between pre and post assessment mean score of temperature, pulse rate, respiratory rate, systolic and diastolic blood pressure in the study group and a negative correlation was observed between pain and temperature, pulse rate, respiratory rate, systolic and diastolic blood pressure during pre and post assessment. In the control group, temperature had a significant negative correlation with respiratory rate and pulse rate during pre and post assessments. A significant positive correlation was present between pulse rate and respiratory rate. Diastolic pressure had a significant positive correlation with temperature and systolic blood pressure and negative correlation with pulse rate and respiratory rate during pre and post assessments.

There was a significant positive correlation between state and trait anxiety at p<0.001 level. A moderate negative correlation was present between state and trait anxiety and depression during posttest I, II and III in the study group. A significant positive correlation was present between
state and trait anxiety during pretest and posttest I, II and III at p<0.001 level in the control group.

Pretest depression score was also positively correlated with state and trait anxiety scores during pretest and posttest I, II and III and posttests depression score in the control group at p<0.001 level of significance in the control group.

There was a significant positive correlation between pre and post assessment mean temperature score with state and trait anxiety and depression scores during posttest. Systolic and diastolic blood pressure was negatively correlated with posttest scores of state and trait anxiety and depression in the study group. Pre assessment pain score was significantly associated with state and trait anxiety and depression scores in the study group. A significant negative correlation was present between pre and post assessment respiration scores with state and trait anxiety posttests scores in the study group.

The above observation was supported by Törer N, Nursal TZ, Calişkan K, Ezer A, Colakoğlu T, Moray G, et al. (2010). They analyzed the effect of anxiety and depression on the postoperative complications and length of hospitalization of patients with breast cancer in Turkey. Beck's Depression Inventory (BDI) and Hospital Anxiety and Depression Scale (HADS) were filled out by the patients pre-operatively. There was a significant correlation between the pain score and Beck, HADS, HADS (anxiety) and HADS (depression) (8 hours ; p = 0.021, 0.001, 0.004, 0.005 and 24 hours ; p = 0.005, 0.012, 0.006, 0.120).

**The fifth objective of the study was to associate the biophysiological status, anxiety and depression with selected background variables among patients subjected to major surgical procedures.**
**Temperature with background variables**

There was a significant association between educational qualifications and post assessment temperature score on day 1 in the study group at p<0.001 level. Post assessment temperature score in the control group on day 7 was significantly associated with social support at p<0.01 level. (Table 4.46)

**Pulse rate with background variables**

Post assessment pulse rate on day 1 in study group was associated with family monthly income and co-morbid illness in the control group with a type of surgery. In the study group, on day 7 the post assessment pulse rate was associated with marital status, occupation and co-morbid illnesses. In the control group, on day 7 the post assessment pulse rate was associated with age, educational qualification, marital status, occupation, family monthly income, medical expense bearer, social support and type of surgery. (Table 4.49)

**Respiratory rate with background variables**

On day 1, in the control group during post assessment significant association was present between respiratory rate with medical expense bearer and type of surgery. With regard to the study group significant association was present between the respiratory rate and the type of residence on day 7 post assessment. In the control group, during post assessment respiratory rate was associated with age, educational qualification, occupation, family monthly income, medical expense bearer, social support, dependency of the family, type of family and anaesthesia on day 7. (Table 4.52)

**Blood pressure with background variables**
On day 1, systolic blood pressure was associated with co-morbid illnesses in the study group and with age, family monthly income, social support and co-morbid illnesses in the control group. On day 7, in the study group systolic blood pressure was associated with co-morbid illnesses and type of surgery. With regard to the control group, age, family monthly income and co-morbid illnesses with mean systolic blood pressure during post assessment (Table 4.55). Table 4.58 depicts that on day 1, during post assessment in the control group, family monthly income, social support and co-morbid illnesses were associated with diastolic blood pressure and with occupation on day 7. With regard to the study group, on day 7 diastolic blood pressure during post assessment had an association with family monthly income and co-morbid illnesses

**Pain with background variables**

In the study group, on day one age and marital status was associated with pain scores during post assessment and on day 7 with occupation. (Table 4.61)

**State and trait anxiety with background variables**

In the study group, occupation and family monthly income was associated with trait anxiety score during posttest I. In the control group during posttest I, II and III place of residence was associated with state and trait anxiety.

**Depression with background variables**

Depression scores were associated with type of family and marital status during posttest II and III in the study group and with co-morbid illnesses during posttest III only in the study group. (Table 4.70).
Thus the study findings matched with the factors discussed in the conceptual framework based on Caslista Roy’s Adaptation model.

**Limitations of the study were**

- The investigator and the study participants were aware of the group i.e., study and control group, to which they belonged. Hence there was a possibility of effect of treatment in which the investigator had no control.
- The investigator had no influence on the social factors contributing to their healthy behavior such as educational qualification, occupation and type of family among the patients subjected to major surgical procedures.
- The study and control groups were from the same setting.
- Anxiety and depression variables were measured subjectively as oral response was only elicited from the study participants using standardized scales.
- The investigator did not have any control on the medication administered for pain management.