CHAPTER V
DISCUSSION

Asthma is associated with increase in airway resistance, decrease in forced respiratory volumes and flow rates, hyperinflation of the lungs and increased work of breathing (Peter J. Barnes, 2008). Apart from the conventional pharmacological modes of asthma management, various modalities currently categorized as complementary and alternative medicine (CAM), which includes the ancient practice of yoga are emerging as adjunct therapies for asthma (Wong ML and Hong CY et al., 2009).

This chapter offers a detailed insight into the findings of this study as interpreted through statistical analysis. The findings are discussed in relation to the objectives, need for the study, available literature.

From the current study, it is evident that there may be a defined beneficial effects of integrated approach. As evident from previous literature, lack of knowledge on disease process and triggers aggravate the asthma symptoms and lessen asthma control and reduce quality of life. Also known from previous literature is the fact that integrated approach lead to an improvement in knowledge, attitude and self-efficacy, increases quality of life, improves pulmonary functional measures. The researcher devised integrated approach of educational tools and yoga in the overall outcome among patients with bronchial asthma attending outpatient services at a tertiary care hospital. The findings are discussed in relation to the objectives of the study and the strength and limitation are also included.
Characteristics of the Samples

Patients with partly controlled and uncontrolled levels of asthma control were selected for the study. The major focus of the interventions were focused on enhancing the knowledge, attitude and self-efficacy, control the asthma symptoms, improve the pulmonary functional measures and maximize the quality of life. Patients with severe type of asthma were excluded from the study because such cases necessitated hospitalization.

A descriptive analysis of the demographic variables shows that (Table 7) in both the study and control group, most of the patients 28 (22.4%) in study group and 33 (26.4%) in the control group were in the age group of 31-40 years. This shows that the samples were distributed evenly amongst both groups, eliminating potential bias.

With respect to the gender, 70 (56%) in study group and 69(55.2%) in control group were males. The similarity in distribution of gender amongst study and control groups indicates a non-significant difference, thereby eliminating error due to sampling bias.

With regard to education 65 (52 %) and 57 (45.6%) had primary level of education in the study and control groups respectively. 98(78.4 %) in the study group and 96 (76.4%) in the control group were married, indicating a non-significant difference in sampling amongst study and control groups.

Pertaining to the occupation 64 (50.4%) in the study group and 65(52%) in the control group were in the category of employed, 58 (46.4%) and 53 (42.4%) had an income of below Rs.3001-6000 in the study group and control groups
respectively. The study findings is supported by Kaur et al., (2010) identified that a positive association was seen between asthma and lower socio-economic status people (low income, illiterates and labor). 79(63.2%) in the study group and 76(60.8%) in the control group account for nuclear family. Most of the subjects 67(53.6%) in the study group and 64(51.2) hailed from the urban area.

79 (63.2%) and 83(66.4%) has family history of asthma in the study and control group respectively, showing that there could be no error in results due to sampling bias pertaining the background variables. The current study findings is supported by Rao et al., and Kaur et al., (2009) found that there was a strong association of family history with the prevalence of asthma. Homogeneity was maintained in the distribution of demographic variables in both the groups.

A descriptive analysis of the clinical variables showed that (Table 8) in both the study and control group, with regard to the BMI, 53(42.2%) in the study group and 55 (44%) in the control group were overweight. The findings of this study is supported by Lavoie KL, Bacon SL, Labrecque M, Cartier A, Ditto B., (2006) assessed BMI in a Canadian sample of asthma outpatients, and evaluated associations between BMI and levels of asthma severity, asthma control, and asthma-related quality of life among 382 adult asthma patients underwent demographic and medical history interviews on the day of their clinic visit. The results identified that higher BMI and obesity as potential behavioral factors related to worse asthma control and quality of life, but not asthma severity, and suggest important avenues for asthma management and control initiatives. 40 (32%) in the study group developed asthma at the age between 6 to 15 years and 43(34.4%) in the control group had developed asthma in the age between
16 to 25 years. With respect to the duration of asthma, 96 (76.8%) in the study group and 93 (74.4%) in the control group had 6 to 15 years of duration of asthma. 83 (66.4%) in the study group and 88 (70.4%) in the control group visits hospital 4 to 6 days in a month. 74 (59.2%) and 75 (60%) in the study and control group had climatic changes as their triggers, indicating proportional sampling amongst both the groups. Maintained homogeneity in the distribution of clinical variables in both the group.

**The first objective of the study was to determine the effectiveness of integrated approach on knowledge, attitude and self-efficacy, asthma control, pulmonary functional measures and quality of life among patients with bronchial asthma attending outpatient services at a tertiary care hospital.**

**Knowledge, attitude and self-efficacy**

The present study revealed that there is an improvement in the knowledge score compared to the control group. 11 (9%) had moderately adequate knowledge, 114 (91%) had inadequate knowledge in the study group and 16 (3%) had moderately adequate and 119 (97%) had inadequate knowledge in the control group during pretest. During Posttest I, 48 (40%) had adequate knowledge, 24 (20%) had moderately adequate and 48 (40%) had inadequate knowledge in the study group and 7 (6%) had adequate knowledge, 23 (19%) had moderately adequate and 93 (75%) had inadequate knowledge in the control groups respectively. In the posttest II, 54 (45%) had adequate knowledge, 58 (48.3%) had moderately adequate and 8 (6.7%) had inadequate knowledge in the study group and 12 (10%) had adequate knowledge, 25 (20%) had moderately adequate and 86 (70%) had inadequate knowledge in the control group. During posttest III, 72 (60%) had adequate knowledge, 44 (37%) had moderately adequate, 4 (3%)
had inadequate knowledge in the study group and 23 (19 %) had adequate, 36 (29 %) had moderately adequate and 64 (52%) had inadequate knowledge in the control group. Findings reveal that the integrated approach had an influence on knowledge which is statistically proved.

Table 18 explored that there is a significant improvement in the knowledge score which is depicted by increase in mean score of 9.93 at pretest and 16.41 during Posttest III in the study group, which was highly significant at p<0.0001. In the control group, mean score was increased from 8.32 to 10.34 during Posttest III, which was not statistically significant. This detail conveys the information that there is an improvement in the knowledge score among the study group patients since the integrated approach had a great influence. These findings is supported by the study done by Anjan Kumar DS et al., (2009) in which they found intervention group patients had higher scores in asthma knowledge. Another study conducted by Franks TJ et al., (2005) concluded that patient education improve the knowledge of the patient towards disease management. Caro A. Mancusoet al., (2010)determined that among 180 patients enrolled with a mean age of 43 years and 84% were women had mean score of 52 with a possible score of 0-100. Joan K Wigal et al., (2013) exhibited a significant mean increase in knowledge of 4.71, from 13.00 at baseline to 17.71 following intervention which was significant at p<0.001.

The current study revealed the frequency and percentage distribution of attitude score (Table 10). During Pretest, 87 (70 %) had very unfavourable attitude, 8 (6 %) had unfavourable attitude, 30 (24 %) had neutral attitude in the study group and 98 (78 %) had very unfavourable, 6 (5 %) had unfavourable,
11 (9 %) had neutral, 10 (8 %) had favourable attitude in the control group. In the Posttest I, 18 (15 %) and 93 (76 %) had very unfavourable attitude, 13 (11 %) and 7 (6 %) had favourable attitude, 3 (2.5 %), 13 (11 %) had neutral attitude, 35 (29 %) and 10 (8 %) had favourable attitude in both the study and control groups. In the Posttest II, 5 (4 %) had unfavourable attitude, 19 (16 %) had neutral, 40 (33 %) had favourable attitude, 51 (43 %) had very favourable attitude in the study group and 93 (76 %) had very unfavourable, 5 (4 %) had unfavourable, 17 (14 %) had neutral, 8 (7 %) had favourable attitude in the control group. During Posttest III, 21 (18 %) had unfavourable attitude, 7 (6 %) had neutral, 40 (33 %) had favourable, 52 (43 %) had very favourable attitude in the study group and 90 (73 %) had very unfavourable attitude, 33 (27 %) had unfavourable attitude in the control group. The findings reveal that the integrated approach had an influence on attitude which is statistically proved.

Table 20 explored that there was a significant improvement in the attitude score which is depicted by increased in mean score of 67.83 at pretest and 77.11 during Posttest III in the study group, which was highly significant at p<0.0001. In the control group, mean score was increased from 63.72 to 67.48 during Posttest III, which was not statistically significant. This detail conveys the information that there is an improvement in the attitude score among the study group patients since the integrated approach had a great influence. The findings is supported by Caro A. Mancuso et al., (2010) found that attitude toward asthma was positive with the mean score = 82, possible range 20–100, higher is more positive attitude. Another study also supports the current study findings by Joan K. Wigal., (2013) determine that the experimental group exhibited a significant mean increase in attitude of 11.15, from 80.64 at baseline to 91.79
following intervention. In contrast, the control group exhibited a non-significant mean decrease in attitude of 2.50, from 80.94 to 78.44, for the same time period. The difference between groups was statistically significant, as demonstrated by a group by time interaction, $F(1,28) = 15.20, p<0.001$.

**Self-efficacy**

The present study (Table 11) depicted that the frequency and percentage distribution of self-efficacy score, 42 (34 %) were not confident, 3 (2 %) were somewhat confident, 55 (44 %) was uncertain, 5 (4 %) were confident and 20 (16 %) were highly confident in the study group and 85 (67 %) were not confident, 2 (2 %) were somewhat confident, 31 (25 %) were uncertain and 7 (6 %) were confident in the control group during pretest. In the post test I, 56 (46 %) were somewhat confident, 19 (16 %) were uncertain, 5 (4 %) were confident and 40 (33 %) were highly confident in the study group and 73 (59 %) were not confident, 42 (34 %) were uncertain and 10 (8 %) were confident in the control group. During posttest II, 58 (48 %) were somewhat confident, 6 (5 %) were uncertain and 50 (42 %) were highly confident in the study group and 75 (61 %) were not confident, 25 (20 %) were somewhat confident, 12 (10 %) were uncertain and 11 (9 %) were confident in the control group. During posttest III, 59 (48 %) were somewhat confident, 6 (5 %) were confident and 58 (47 %) were highly confident in the study group and 75 (61 %) were not confident, 27 (22 %) were somewhat confident, 10 (8 %) were uncertain and 11 (9 %) were confident in the control group. Findings reveal that the integrated approach had improved their self-efficacy which is statistically proved.
Table 20 explored that there was a significant improvement in the self-efficacy score which is depicted by increased in mean score of 56.31 at pretest and 68.82 during Posttest III in the study group, which was highly significant at p<0.0001. In the control group, mean score was increased from 55.43 to 58.30 during Posttest III, which was not statistically significant. This detail conveys the information that there is an improvement in the self-efficacy score among the study group patients since the integrated approach had a great influence. The findings is supported by Joan K.Wigal., (2013) exhibited a significant mean increase in self-efficacy of 11.71, from 77.50 at baseline to 89.21 following intervention. In contrast, the control group exhibited a non-significant mean decrease in self-efficacy of 1.69, from 76.63 to 74.94, during the same time period. Another study conducted by Caro A.Mancuso et al., (2010) found that self-efficacy was moderate (mean score = 76, possible range 20–100, higher is more self-efficacy) and not having had a recent emergency department visit for asthma were associated with more self-efficacy (p ≤ .07 for all variables). In additional multivariate analyses, more self-efficacy (p = .01) were associated with better AQLQ scores.

Hence the Hypothesis (H1) “There is a significant difference in the knowledge, attitude and self-efficacy score among outpatients with bronchial asthma who attended the integrated approach than those who do not” was accepted.

Asthma control

The present study revealed that there is an improvement in the levels of asthma control. During Pretest, 27(22%) in the study group and 21(17%) in control group were in partially controlled level of asthma control, 98(78%) in the
study group and 104(83%) in the control group were in uncontrolled level of asthma control. In the Posttest III, 30(25%) in the study group were controlled level of asthma control, 54(45%) in the study group, 58(47%) in the control group were in partially controlled level of asthma control and 36(30%) in the study group, 65(53%) in the control group were in Uncontrolled level of asthma control. Findings reveal that the Integrated approach had improved their level of asthma control which is statistically proved.

Table 21 explored that there was a significant improvement in the asthma control score which is depicted by increase in mean score of 38.43 at pretest and 21.67 during Posttest III in the study group, which was highly significant at p<0.0001. In the control group, mean score was increased from 39.82 to 30.52 during Posttest III, which was not statistically significant. This detail conveys the information that there is an improvement in the asthma control score among the study group patients since the integrated approach had a great influence.

Table 15 depicted the frequency and percentage distribution of daytime symptoms during pretest. 21(17%) in the study group and 16(13%) in the control group experienced day time symptom once in a week, 38(30%) and 42(34%) in the study and control group experienced day time symptoms twice in a week, 56(45%) and 52(42%) in the study and control group experienced day time symptoms three times in a week, 10(8%) in the study group and 15 (11%) in the control group experienced day time symptoms four times in a week. During posttest III, 35(29%) in the study group and 26(21%) in the control group experienced day time symptom once in a week, 55(46%) and 62(51%) in the study
and control group experienced day time symptoms twice in a week. 30(25%) and 35(28%) in the study and control group experienced day time symptoms three times in a week. It is evident from these results that integrated approach had mild effect.

Table 16 explored the frequency and percentage distribution of nocturnal symptoms. During Pretest 97(78%) in the study group and 106(85%) in the control group experienced nocturnal symptoms 1-3 times in a week, 28(22%) and 19(15%) in the study and control group experienced nocturnal symptoms more than three times in a week. During Posttest III 15(12%) have not experienced nocturnal symptoms, 81(68%) and 109(89%) in the study and control group experienced nocturnal symptoms one to three times in a week, also 24(20%) in the study group and 14(11%) in the control group have experienced nocturnal symptoms more than three times in a week. It is evident from these results that Integrated approach had mild effect. These findings are substantiated by Demeke Mekonnen, Andualem, Mossie et al., (2010) determined the effect of yoga on patterns of clinical features, peak expiratory flow rates and use of drugs among 24 volunteer asthmatic patients who are getting support at missionary of charity and they were grouped into yoga and control group. The results revealed that yoga group showed 66.7 % reduction in the use of salbutamol puff and 58.3 % salbutamol tablets. There was a 10 % reduction in the PEFR in the yoga group while only 2% in the control group. There was statistically significant reduction in day and night asthma attacks, improvement in the peak expiratory flow rate in the yoga group.
Table 17 depicted that during pretest, 96(77%) in the study group and 98(78%) in the control group, in the Posttest I 93(78%) in the study group and 103(84%) in the control group, in the Posttest II 98(82%) in the study group and 96(78%) in the control group, in the posttest III 104(87%) and 105(85%) in the study and control group had history of exacerbations in the last one year. With respect to the occurrence of exacerbations more than once, 29(23%) and 27(22%) in the study and control group experienced during pretest, 27(22%) and 20(16%) in the study and control group experienced exacerbations during posttest I, 22(18%) and 27(22%) in the study and control group had during Posttest II and 16(13%) in the study group and 18(15%) in the control group had exacerbations during posttest III.

Good asthma management is the utmost importance in achieving control and should include: institution of (inhaled) medication; asthma self-management education including inhaler technique assessment; written asthma plans; self-monitoring of symptoms or airflow, and regular medical review (GINA, 2011; Guarnaccia 2007; O’Byrne 2006). Hence, the investigator educated the patients on disease condition and instructed to self-monitor using peak flow meter at home.

Hence the Hypothesis (H2) “There is a significant difference in the asthma control score among patients with bronchial asthma who attended the integrated approach than those who do not” was accepted.

Pulmonary functional measures

Results of table 22 showed that forced vital capacity (FVC in liter) increased from 2.58 during pretest to 3.42 in the posttest III in study group
whereas in the control group it remained the same from 2.48 to 2.58 in the posttest III, forced expiratory volume in the first second (FEV₁) increased from 2.02 in pretest to 2.22 in the posttest III in the study group whereas in the control group it remained the same from 2.01 in pretest to 2.13 in the posttest III, ratio of FEV₁/FVC has improved from 72.34 in pretest to 78.36 in posttest III in the study group but in the control group it was 72.04 to 70.83 in the posttest III and Peak expiratory flow rate (PEF) had improvement from 5.94 in the pretest to 6.16 in the posttest III in study group whereas in the control group it remained the same from 5.12 to 5.04 in the posttest III. It can be observed from the table that all data of control groups such as FVC, FEV₁, FVC/FEV₁, PEFR did not change. After six months of yoga training, Posttest III, in comparison with control group, all indicators of study group were significantly improved with the level of P<0.05 to 0.001 respectively. The study group showed a statistically significant increasing trend in FVC (Liter) over time: from baseline to at 6 months, while the control group subjects showed variable change in FVC (Liter) with an overall decrease which was statistically not significant. The findings of the study is supported by (Nathan and colleagues, 2006) compared the maximal PEF measurement at first hospital visit with the six-month follow-up measurement. Another study findings by Candy sodhi., (2008) determined the role of yoga breathing exercises, as an adjunct treatment for bronchial asthma. One hundred twenty patients of asthma were randomized into two groups i.e Group A (yoga training group) and Group B (control group). Each group included sixty patients. Pulmonary function tests were performed on all the patients at baseline, after 4 weeks and then after 8 weeks. Majority of the subjects in the two groups had mild disease (34 patients in Group A and 32 in Group B). Group A subjects showed a statistically significant
increasing trend (P<0.01) in % predicted peak expiratory flow rate (PEFR), forced expiratory volume in the first second (FEV1), forced vital capacity (FVC), forced mid expiratory flow in 0.25–0.75 seconds (FEF25-75) and FEV1/FVC% ratio at 4 weeks and 8 weeks as compared to Group B. Thus, yoga breathing exercises used adjunctively with standard pharmacological treatment significantly improves pulmonary functions in patients with bronchial asthma. These findings are substantiated by Agarwal.S., (2013) assessed the effects of pranayama yoga practice on lung functions in patients with bronchial diseases. After three months of yoga practice, breath indicators such as FVC, FEV1, FEV1/FVC, PEFR of intervention group significantly improved with p value <0.01 to 0.001 in comparison with the previous three months of the control group. Practicing pranayama is beneficial to patients with bronchial asthma.

Ramprabhu et al., (2009) showed in a study of 57 asthma patients that significant changes was found in FEV1 and PEFR in the yoga group after the regular practice of yoga for 8 weeks of study period from the baseline. This study supported the efficacy of yoga in the management of bronchial asthma as the quality of life was improved significantly in the yoga group too.

Table 25 explored the mean score of respiratory rate in the study and control group. During pretest the mean score was 28.34 and it was reduced to 22.36 during posttest III in the study group which was statistically significant at p<0.05, whereas in the control group, the mean score was 27.34 in the pretest to 26.43 in the posttest III which was not statistically significant.
Table 26 explored the mean score of Breath Holding Time (BHT) in the study and control group. During pretest the mean score was 17.18 and it was increased to 25.93 during posttest III in the study group which was statistically significant at p<0.01, whereas in the control group, the mean score was 18.72 in the pretest to 18.62 in the posttest III which was not statistically significant. The findings is supported by Miles W.R., (1997) was one of the first persons to study the respiratory changes during pranayama which could reduce oxygen consumption and increase working efficiency, decrease respiratory rate, increase vital capacity and breath holding time.

Table 27 highlighted the frequency and percentage distribution of changes in the use of symptom rescue medication in the study and control group. During posttest I and III, 24 (20%) and 35(29%) had reported the reduced usage of rescue medication, 1(0.8%) reported increased use of rescue medications and 96(80%) during posttest I and 84(70%) in the posttest III reported that there was no change in the use of rescue medications which was significant at p<0.05. It is evident from these results that integrated approach had mild effect.

Hence the Hypothesis (H3) “There is a significant difference in the pulmonary functional measures score among patients with bronchial asthma who attended the integrated approach than those who do not” was accepted.

Quality of life

Table 13 revealed the frequency and percentage distribution of Quality of life score between the study and control group. During the Pretest 116(97%) in the study group and 118(94%) in the control group had severe impairment, 4(3%) and 5(4%) in the study and control group had moderate impairment, 5(4%) and 2(2%)
in the study and control group had mild impairment. However, during Posttest I, 64(53%) had severe impairment, 35(29%) had moderate impairment, 21(18%) had mild impairment in the study group and 110(89%) had severe impairment, 13(11%) had moderate impairment in the control group. Also, 38(32%) in the study group showed severe impairment, 50 (41%) had moderate impairment, 32(27%) had mild impairment and 98(80%) had severe impairment and 25 (20%) had moderate impairment in the control group. Findings reveal that the Integrated approach had improved their quality of life which is statistically proved.

Table 23 explored that there was a significant improvement in the quality of life score which is depicted by increased in mean score of 64.91 at pretest and 130.48 during Posttest III in the study group, which was highly significant at p<0.0001. In the control group, mean score was increased from 62.32 to 78.82 during Posttest III, which was not statistically significant. This detail conveys the information that there is an improvement in the quality of life score among the study group patients since the integrated approach had a great influence.

Table 24 illustrated the mean score of quality of life domains. With regard to the symptoms domain, there was an increase in mean score of 38.09 at pretest and 70.37 in the Posttest III in the study group, which was significant at p<0.001. In the control group, mean score was increased from 36.09 to 42.17 during Posttest III, which was also statistically significant. With regard to the activity limitation domain, there was an increase in mean score of 28.10 at pretest and 66.36 in the Posttest III in the study group, which was significant at p<0.0001. In the control group, mean score was increased from 20.01 to 32.16 during Posttest III, which was not statistically significant. With respect to the emotional function
domain, there was an increase in mean score of 12.05 at pretest and 28.56 in the Posttest III in the study group, which was significant at p<0.001. In the control group, mean score was increased from 10.05 to 15.56 during Posttest III, which was also statistically significant. With respect to the environmental stimuli, there was an increase in mean score of 15.79 at pretest and 25.31 in the Posttest III in the study group, which was significant at p<0.001. In the control group, mean score was increased from 16.27 to 20.31 during Posttest III, which was also statistically significant. This detail conveys the information that there was an improvement in the domain wise quality of life score between the study and control group patients since the integrated approach had a great influence. The present study is supported by Van Cauwenberg P., (2002) shown that asthma can adversely affect the physical, psychological and social domains. When we compared the degree of limitation in each domain it was found that most of the patients had severe limitation in the symptoms, emotional function and environmental stimuli. But in the activity domain most of the patients had mild limitation. This is paradoxical to the study conducted in Nigeria where there was severe limitation in the activity domain.

Hence the Hypothesis (H4) “There is a significant difference in the quality of life score among patients with bronchial asthma who attended the integrated approach than those who do not” was accepted.

The second objective of the study was to correlate the knowledge, attitude and self-efficacy, asthma control, pulmonary functional measures and Quality of life.
On analyzing the relationship between study variables and background variables (Table 37) showed that during pretest there were weak positive correlation between the attitude and self-efficacy which was statistically significant at p<0.01, self-efficacy and asthma control was statistically significant at p<0.05, moderate positive correlation between knowledge and asthma control at p<0.05 and weak positive correlation between knowledge and attitude, knowledge and asthma control, weak negative correlation between knowledge and self-efficacy, self-efficacy and asthma control at p<0.001.

Hence the Hypothesis (H5) “There is a significant relationship between the knowledge, attitude and self-efficacy score with asthma control among patients with bronchial asthma who attended the integrated approach than those who do not” was accepted.

Table 38 revealed that during posttest III, there were highly significant (p<0.0001) strong correlation between asthma control and pulmonary functional measures. Hence the Hypothesis (H6) “There is a significant relationship between the asthma control and pulmonary functional measures among patients with bronchial asthma who attended the integrated approach than those who do not” was accepted.

Table 38 depicted that there was an moderate positive correlation between the pulmonary functional measures and quality of life in the study group with r value of 0.568 which was significant at p<0.05, whereas in the control group there is an weak negative correlation which was not significant. Hence the Hypothesis (H7) “There is a significant relationship between the pulmonary functional measures and quality of life among patients with bronchial asthma who attended the integrated approach than those who do not” was accepted.
There was a weak positive correlation between knowledge, attitude, self-efficacy with quality of life which is significant at p<0.001 and p<0.05 in the study group, whereas in the control group weak negative correlation exists between knowledge and quality of life which is significant at p<0.0001, there was no significant relationship between the attitude, self-efficacy with quality of life.

**Hence the Hypothesis (H8) “There is a significant relationship between the knowledge, attitude and self-efficacy with quality of life among patients with bronchial asthma who attended the integrated approach than those who do not” was accepted.**

Table 39 elicited that there was a positive correlation between yoga practice and asthma control during posttest I which was significant at p<0.05.

**Hence the Hypothesis (H9) “There is a significant relationship between the yoga practice and asthma control among patients with bronchial asthma who attended the integrated approach than those who do not” was accepted.**

There was a moderate positive correlation between yoga practice and quality of life (p<0.001) whereas in the control group there was an weak negative correlation between yoga practices and quality of life and asthma control which was not significant at p<0.0001. KhueAi Thi Hoang, Hung Manh., (2015) conducted a study to assess the effects of pranayama yoga practice on lung functions in patients with bronchial diseases. This is a controlled trial study. After three months of yoga practice, breath indicators such as FVC, FEV₁, FEV₁/FVC, PEFR of intervention group significantly improved with p value <.01 to .001 in comparison with the previous three months of the control group. Hence, practicing
pranayama yoga is beneficial to patients with bronchial asthma. The findings is supported by Amy J. Bidwell, Beth Yazel, David Davin, Timothy J. Fairchild, Jill A. Kanaley., (2011) assessed whether 10 weeks of yoga training improve quality of life and heart rate variability in patients with asthma. Hence, yoga training improved quality of life in women with mild –to-moderate asthma and resulted in decreased parasympathetic and increased sympathetic modulation. Hence the Hypothesis (H10) “There is a significant relationship between the yoga practice and quality of life among patients with bronchial asthma who attended the integrated approach than those who do not” was accepted.

The third objective of the study was to associate the selected background variables with knowledge, attitude and self-efficacy, asthma control, pulmonary functional measures and Quality of life.

However, the present study identified (Table 41) a significant association between the posttest knowledge score and family history, age of onset of illness, duration of illness, frequency of hospital visits and at p< 0.05 and triggers at p< 0.001 among patients with bronchial asthma in the study group.

Table 42 draws out a significant association between the posttest attitude score and age, education, type of the family, duration of asthma, and triggers at p< 0.05 and education, type of family at p< 0.001 among patients with bronchial asthma in the study group.

Table 43 depicted a significant association between the posttest self-efficacy score and gender, income, duration of asthma and frequency of hospital visit at p< 0.05 and education, type of family, age of onset, duration of asthma at p<0.001 among patients with bronchial asthma in the study group.
Table 44 depicted a significant association between the posttest quality of life score and gender, age of onset at \( p < 0.05 \), marital status and residence at \( p < 0.001 \), education, BMI, duration of asthma, frequency of hospital visit at \( p < 0.0001 \) among patients with bronchial asthma in the study group.

Table 40 represented that there was a significant relationship knowledge, attitude and self-efficacy, pulmonary functional measures and quality of life during posttest III at \( p < 0.05 \) for multivariate regression combination on predictors on age, gender, education, duration of asthma, frequency of hospital visit and family history.

**Discussion through theory**

The components of the theory were well suited with the research steps and were a guideline for obtaining results.

**a. INDIVIDUAL CHARACTERISTICS AND EXPERIENCE**

Individual characteristics and experiences included the demographic variables such as age, sex, education, occupation, income, religion, residence, type of family and family history of asthma, triggers and residence. The clinical variables are duration of illness, frequency of hospital visit. The outcome variables are knowledge, attitude and self-efficacy, asthma control, pulmonary functional measures and quality of life. The groups were evenly distributed and there was no significant difference between the study and control groups.
b. BEHAVIOUR SPECIFIC CONDITIONS AND AFFECT

(i) PERCEIVED BENEFITS OF ACTION

In this study the awareness of disease process, lifestyle modification factors and yoga technique practices are believed to influence the need to undertake a health behavior. Hence the posttest III scores of knowledge, attitude and self-efficacy, asthma control, pulmonary functional measures and quality of life showed a significant improvement from the pretest score.

(ii) PERCEIVED BARRIERS TO ACTION

The barriers faced by the investigator includes lack of time to be spent by the study participants for few days during the follow-up visits, initially the study participants had lack of motivation, inadequate knowledge on the disease process and triggers and poor confidence in carrying out the integrated approach. The patients were motivated and reinforced during posttest I and Posttest II, III in order to have compliance towards the integrated approach.

(iii) PERCEIVED SELF EFFICACY

In this study, the individual’s perceived self capabilities to implement the integrated approach that include knowledge and practice of integrated approach and yoga technique practices are included. The study findings revealed that the integrated approach helped in improving self-efficacy.

(iv) ACTIVITY RELATED AFFECT

A group teaching for the study subjects on Integrated approach (knowledge on disease process, triggers, management etc.) and yoga technique practices for 30 minutes. Review of daily log followed by the reinforcement on the
follow up visits. The study findings revealed that the compliance rate on yoga practice was 93% in the study group.

(v) INTERPERSONAL INFLUENCES

In this study, the interpersonal factor influences are teaching on disease process and demonstration on yoga techniques between the investigator and the study participants, clarification of the doubts and reinforcements by the researcher are considered. The study participants were given motivation and reinforcement during follow-up visits.

(vi) SITUATIONAL INFLUENCES

In this study, the study participants involved actively in the follow-up visits, clarified their doubts and maintained the daily log on symptom, peak flow monitoring and yoga practice.

(c.) BEHAVIOURAL OUTCOME

(i) COMMITMENT TO PLAN OF ACTION

In this study, this refers to the study participants level of adherence to integrated approach and also the reinforcements in person by the investigator can serve as an motivation to carry out the health behavior. 108 (90%) of them in the study group had compliance of using peak flow meter at home.

(ii) IMMEDIATE COMPETING DEMANDS AND PREFERENCES

The direct and telephonic reinforcement by the researcher is also an influencing factor to keep the study group on track to adhere to the intervention.
(iii) HEALTH PROMOTING BEHAVIOUR

The present study findings revealed that there was a significant improvement in knowledge, attitude and self-efficacy, asthma control, quality of life and pulmonary functional measures.

**Strength of the study**

The study was conducted in an outpatient setup. The data was collected on a one to one basis with adequate privacy. The sample size was 243, and hence the study findings can be generalized. This is the first study in the university on integrated approach; hence many studies can emerge from the current study.

The compliance of asthma patients was a major strength. This was probably because they had to attend the OPD for getting their free medicines every 15 days and given peak flow meter to everyone for self-monitoring at home and hence they were cooperative. Patients were instructed to maintain their symptom, peak flow monitoring and yoga performance diary. This added more objectivity in measuring asthma severity.

The outcome variables was assessed for six months. Hence the study allowed sufficient time to improve the compliance towards integrated approach. The control group patients were also given the integrate approach education and yoga after final completion of the study.

Booklets were distributed to the study group and later to the control group. The patients of both the groups expressed the usefulness of their experience and this enthusiasm towards integrated approach may reach many people in the community.
Limitations of the Study

- Although the research has reached its aim, there were some unavoidable limitations.
- The research study is limited to one setting.
- Time was a big constraint so more time could not be devoted to individual respondents.
- The busy schedule of respondents also made the collection of information a difficult one.

The positive findings of the present study are consistent with the assumption that education programs benefit individuals with bronchial asthma. Asthma education including avoidance of asthma triggers, self-monitoring of asthma symptoms, use of asthma action plans, and adherence to prescribed asthma medications are beneficial in reducing asthma morbidity. (NAEPP, 1997; 2003). The findings that the integrated approach had positive effects on knowledge, attitude and self-efficacy, asthma control, pulmonary functional measures and quality of life. A similar finding was observed in the study Varalakshmi Manchana and Rajinder Kaur Mahal., (2015) assessed the effectiveness of structured asthma educational program on self -care management of bronchial asthma among 100 samples. The findings revealed that the pre-test means between experimental (4.630) and control (4.780) groups were not much significant. There was a significant improvement in pretest (19.930; 8.84) and post test scores in the experimental group (42.32; 3.449). The posttest means between experimental (42.31) and control (21.28) supports the significant enhancement in the knowledge of the experimental group after asthma education. Hence the study emphasized that patient education makes the disease management cost effective and more comprehensive.