REVIEW OF LITERATURE

The literature review involves identification and analysis of relevant publications and studies that contain information pertaining to the research problem. The literature review gives information on what is already known about the problem.

(Bai CX et al., 1991) conducted a study at China on application of pursed lips breathing to chronic obstructive pulmonary disease patients with respiratory insufficiency. 18 COPD patients with respiratory insufficiency received the treatment of pursed lips breathing. The results showed that respiratory rate reduced and tidal volume increased significantly. In the meantime, arterial partial pressure of carbon dioxide decreased and arterial partial pressure of oxygen increased significantly. The study findings concludes that the pursed lip breathing exercise can be considered as an effective pulmonary rehabilitation method for COPD patients.

(Rooyackers JM, Dekhniyen PNR, Herwaarden V, Flgering HTM, 1997) conducted a descriptive correlational study at Mount Sinai Hospital in Canada to examine the relationship of dyspnea, physical activity and fatigue in patients with COPD. A convenient sample of 7 male and 15 female patients with COPD was included in the study. Dyspnea was measured by a vertical visual analogue scale, fatigue by fatigue sub-scale of the profile of mood status, and physical activity by 6 minute walk test and open ended questions. The sample was characterized by relatively high forced expiratory volume in one second (FEV1) in dictating mild lung impairment and high mean level of fatigue and dyspnea. The study result shows that dyspnea, physical activities and fatigue were significantly inter-related (p<0.001). The study indicates that higher the dyspnea scores, shorter the 6 minute distance walked, and higher the fatigue scores.

(Onodera A, Yazaki K, 1998) conducted study at Japan to evaluate the effects of a short term pulmonary rehabilitation program on patients with chronic respiratory failure due to pulmonary emphysema. 15 samples were selected for the program which includes pursed lip breathing, diaphragmatic breathing, respiratory muscle stretch gymnastics and walking with synchronized breathing. Visual analogue scale, 6-minute walk and spirometry were the tools used. The study reveals that there is a significant decrease in dyspnea (P<0.01), increase in functional exercise capacity (P<0.01) and significant decrease in total lung capacity (TLC) and residual volume
(RV) (P<0.01). The study concludes that this program relieves dyspnea, increases functional exercise capacity, and decreases total lung capacity and residual volume on patients with chronic respiratory failure due to pulmonary emphysema.

(Avsar G, Kasikci M, 2000) conducted a phenomenological study at Turkey to explore the experience of living with chronic obstructive pulmonary disease, with the aim of gaining an understanding of how the disease affects the patients' lives. 14 COPD patients were selected as samples. In-depth interviews were used to collect the data. Data were transcribed and analysed using the Colaizzi's method. This study identified breathlessness as the most troublesome symptom leading to panic and fear. Participants also described a feeling of frustration and loss of social activity. This also resulted in loss of roles and led to emotional trauma. This study provided valuable insights into how patients view the overall impact and their subsequent degree of coping with COPD from day to day.

(Sudo E, Tanuma S, Yoshida A, Takahashi Y, Kobayashi C, Ohama Y, 2001) conducted a study to test the effect of pulmonary rehabilitation with COPD. 7 COPD patients were selected as samples. The program consisted of relaxation, pursed lip breathing, diaphragmatic breathing, panic control, muscle stretch gymnastics, and exercise training. 6-minute walking test, SpO₂ and Borg scale were used for data collection. The study result revels that the distance of the 6-minute walking test and SpO₂ during the 6-minute walking test increased significantly (p< 0.05) and dyspnea decreased. Finally concluded that the pulmonary rehabilitation might improve exercise tolerance in elderly patients with COPD.

(Singh V et al., 2003) conducted an experimental study at Jaipur to evaluate the effectiveness of pulmonary rehabilitation in patients with COPD. A randomized sampling technique was used to select 40 patients for experimental and control group. The rehabilitation which includes walking, breathing exercise, postural drainage, controlled coughing and changes in life style activities was given for four weeks. It was evaluated by 6 minutes walking distance, forced expiratory volume in one second and various indices of chronic respiratory disease questionnaire were measured in both the groups before and after the completion of the study. The study findings suggest that there was significance difference in 6 minutes walking distance (t=5.4 p<0.005), dyspnea (t=9.6
p<0.05), fatigue (t=9 p<0.005). Change in all these parameters were statistically significant (t=12 p<0.001) as compared to the control group.

(A Ramanakumar, C Aparajita, 2004) conducted a study to review the respiratory disorder burden of rural Indians by utilizing data on survey of cause of death. Data was extracted from survey of causes of death in rural, annual reports of Registrar General of India, Census of India (2001), National family health survey and other community based reports. The data analysis was critical and explanatory. The result showed bronchitis and asthma as leading cause and tuberculosis and pneumonia ranked one of the five major causes for death in rural India.

(Chacko BT, 2005) conducted a quasi-experimental study at Mangalore to evaluate the effectiveness of planned respiratory exercise on the symptoms of patients with COPD. The sample consists of 40 COPD patients. The sample was selected to group I and group II by purposive sampling technique. The data was obtained by structured interview schedule and observation checklist. Data were analyzed by descriptive statistics, paired and unpaired „t‟ test. The study result shows that the mean scores were lower in all areas in post-test. The study findings conclude that the planned respiratory exercise is effective to reduce symptoms of patients with COPD.

(Nguyen HQ et al., 2005) conducted pilot study at USA to determine the feasibility and preliminary efficacy of an Internet-based dyspnea self-management program (iDSMP) for people with chronic obstructive pulmonary disease. 16 samples were selected. Dyspnea, self-efficacy, perception of available support, and exercise behaviour were measured. Paired, independent t tests and Mann-Whitney U tests were used for statistical analysis. The study result shows most subjects (87%) reported that the program increased their access to information and resources for managing dyspnea. And dyspnea with activities of daily living and self-efficacy for managing the symptom showed significant improvements (both P <.01).

(Norweg AM, Whiteson J, Malgady R, Mola A, Rey M, 2005) conducted randomized controlled trial at New York to study the effects of combining activity training or lectures to exercise training on quality of life, functional status and exercise tolerance. 43 samples were randomized to one of three treatment groups: exercise training alone, exercise training plus activity training, and exercise training plus a lecture
series. The chronic respiratory disease questionnaire, the modified version of the pulmonary functional status and dyspnea questionnaire and the COPD self-efficacy scale, the 6-min walk test were used for data collection. The study result reveals that the benefits of activity training combined with exercise included less dyspnea (p ≤ 0.04) and fatigue (p ≤0.01) and increased activity involvement (p ≤0.02) and total functional status (p ≤0.02). The study concluded that a behavioural method emphasizing structured controlled breathing and supervised physical activity was more effective on patients’ quality life.

(A.N. Aggarwall et al., 2006) conducted a study at Chandigarh, Delhi, Kanpur and Bangalore to estimate the prevalence of bronchial asthma in different regions of India and to define risk factors influencing disease prevalence. Two stage stratified sampling technique was used to collect data from 73605 samples using a questionnaire. Statistical analysis was done using univariate and multivariate logistic regression modeling. The result showed that the overall prevalence of asthma is 2.38 % with 2.28%, 1.69%, 2.05 and 3.47% respectively at Chandigarh, Delhi, Kanpur and Bangalore. It concluded that the overall prevalence points towards the national burden of the disease.

(Nield et al.,2007) conducted a randomized, control study at Los Angeles to assess the efficacy of pursed lip breathing: a breathing pattern retraining strategy for dyspnea reduction. 40 samples were randomized to pursed lip breathing, expiratory muscle training and control. Changes in dyspnea and functional performance was assessed by modified Borg after 6 minute walk distance (6MWD), shortness of breath Questionnaire, Human Activity Profile and physical function scale of short form 36-item Health Survey. The study result reveals that there is a significant reduction for the modified Borg Scale after 6 MWD (P=0.05) and physical function (P=0.02) from baseline to 12 weeks were only present for pursed lip breathing. Finally concluded that pursed-lips breathing provided sustained improvement in exertional dyspnea and physical function.

(Resqueti VR et al., 2007) conducted a prospective controlled study at Spain to assess the efficacy of a home pulmonary rehabilitation program in patients with severe COPD. 38 samples were randomly assigned to intervention and control group. Spirometry, 3-minute walk test, medical research council dyspnea scale and chronic respiratory questionnaire were used for data collection. Statistical analysis was done
using student „t” test and Chi Square test with SPSS package, version 11.5. The study result reveals that patient performance on the 3-minute walk test (p=0.001), dyspnea (p=0.002) and fatigue (p=0.002) improved significantly in pulmonary rehabilitation group. The study concluded that a pulmonary rehabilitation program improves exercise tolerance, dyspnea and certain health related quality of life parameters in COPD patients.

(Wolpin S et al., 2008) conducted a randomized controlled study at USA to test the efficacy of two 6-month dyspnea self-management programs, Internet-based (eDSMP) and face-to-face (fDSMP), on dyspnea with ADL in people living with COPD. 50 COPD patients were randomly assigned to eDSMP (n = 26) and fDSMP (n = 24) group. Chronic Respiratory Questionnaire, spirometry and 6 minute walk test were used for data collection. All statistical analysis was performed using SPSS version 14.0. The study result showed that fDSMP and eDSMP showed similar clinically meaningful changes in dyspnea with ADL, self-reported endurance exercise time (P = .001), physical functioning (P = .04), and self-efficacy for managing dyspnea (P = .02). Finally concluded that both dyspnea self-management programs were effective in reducing dyspnea with ADL in the short term.

(Chhabra P, Sharma G, Kannan AT, 2008) conducted a cross-sectional survey in Delhi to study the prevalence of respiratory morbidity and its associated factors. A total of 3465 individuals, aged 18 years or more were administered a questionnaire to identify the major symptoms of chronic respiratory tract disease like chronic cough, chronic phlegm, dyspnea and wheezing. The prevalence of all these symptoms in different groups was calculated. Chi square test and logistic regression were applied to determine the significant factors. The study result shows that overall prevalence of chronic cough, chronic phlegm,dyspnea and wheezing was 2.0%, 1.2%, 3.4% and 3.2%, respectively. The study revealed that age and smoking remained significant factors for occurrence of all the respiratory symptoms.

(Efраймsson EO, Hillervik C, Ehrenberg A, 2008) conducted an experimental study at Sweden to examine the effects of a structured educational intervention program at a nurse led primary health care clinic on quality of life, knowledge about COPD and smoking cessation in patients with COPD. 52 samples were randomized into intervention and control group. Data were collected using knowledge questionnaire and St.George
Respiratory Questionnaire and statistically analyzed with Mann-Whitney U test and Fisher’s exact test. The study result noted a statistically significant increase on quality of life, number of patients who stopped smoking and patient’s knowledge about COPD. The study finally concluded that a structured programme with self-care education is needed to motivate patients for lifestyle changes.

(Harth L et al., 2009) conducted a prospective, cross-sectional postal survey across Canada to examine the current practice patterns of physical therapists involved in the management of patients hospitalized with an acute exacerbation of chronic obstructive pulmonary disease. A self-administered postal survey was distributed to the rehabilitation departments of all Canadian acute care hospitals with more than 250 beds. 66% of hospitals (n=109) participated in the study. The survey addressed patient assessment, treatment, education and discharge planning for intensive care unit and or ward admissions. The survey instruments include questionnaire and a five-point Likert scale. Data was analyzed using SPSS version 14.0 software. The study result revealed that the physical therapists frequently educated patients regarding the use of pursed lip breathing, diaphragmatic breathing, as well as positioning for shortness of breath. The study findings concluded that the assessments focused predominantly on acute impairments of pulmonary function, and treatment focused predominantly on patient mobilization and breathing techniques aimed at minimizing dyspnea.

(Moore J et al., 2009) conducted an experimental study at London to evaluate the effect of a home exercise video programme which includes benefits of exercise in COPD and the exercises to take at home in patients with chronic obstructive pulmonary disease. Twenty samples were randomized to intervention or control group. The tools used were self-reported chronic respiratory disease questionnaire and Borg breathlessness scale. The data was analysed within intervention and control groups using Wilcoxon signed-rank tests and between groups by Mann-Witney U-test with SPSS Version 14. The study result reveals that the median change in the Incremental Shuttle Walk Test and breathlessness score significantly improved in the intervention group compared with the control (p = 0.042). The other findings for the self-reported Chronic Respiratory Questionnaire showed significant improvements in the intervention group for emotion (p < 0.001) and
fatigue (p = 0.012). Finally concluded that participation in a home exercise video programme may benefit people with chronic obstructive pulmonary disease.

(Zakerimoghadam M, Tavasoli K, Nejad AK, Khoshkesht S, 2011) conducted quasi-experimental research at Iran to assess the effect of breathing exercises on fatigue level of the patients with COPD. 60 hospitalized COPD patients were selected and randomized into experimental and control groups. Data were gathered by interview and data registration from the files. The data gathered using questionnaires, fatigue severity scale (FSS) and respiratory exercise usage checklist. The data were analysed using SPSS software with the descriptive and deductive statistical methods. The study result shows that there was a significant inverse correlation between respiratory exercises and fatigue severity and concludes that respiratory exercise is effective in reducing the fatigue in patients with COPD.

(Mathew J, D'silva F, 2011) conducted a true experimental study at Mangalore to evaluate the effect of deep breathing exercise on the pulmonary function of patients with chronic airflow limitation. 40 samples were selected and randomly grouped into experimental and control groups. The PFT parameters were assessed before and after the intervention and were compared. The study result shows that deep breathing exercise was found to statistically significant in improving the pulmonary function of patients with chronic airflow limitation, and finally concluded that 7 days of deep breathing exercise for clients with chronic airflow limitation was very effective in improving pulmonary function.

(Shyma k, D’silva F, 2011) conducted a descriptive correlational study at Mangalore, on symptoms and quality of life of patients with chronic obstructive pulmonary disease. The sample comprised of 100 COPD patients. The dyspnea and fatigue numerical rating scale, sleep disturbance rating scale and SGRQ were used for data collection. Statistical analysis was done using Pearson correlation coefficient, multiple regression analysis and Chi-square test. This study reveals that there is a significant positive correlation between SGRQ score and dyspnea, sleep and fatigue at 0.05 level of significance. This study highlights the facts that COPD patients experience symptoms like fatigue, dyspnea and sleep disturbance in order of decreasing severity.
This calls for the need to integrate symptom management in the comprehensive care plans, for a better quality of life.

(Kim K et al., 2012) conducted a study at South Korea to determine the influence of breathing maneuver and sitting posture on tidal volume (TV), respiratory rate (RR), and muscle activity of the inspiratory accessory muscles in 12 male patients with chronic obstructive pulmonary disease (COPD). Inductive respiratory plethysmography and surface electromyography were used for data collection during quiet natural breathing and pursed-lips breathing (PLB) in three sitting postures: neutral position, with arm support; and with arm and head support. Two-way repeated-measures analysis of variance was employed for statistical analysis. The study result reveals that, in a comparison of breathing patterns, PLB significantly increased TV and decreased RR compared to quiet natural breathing. Muscle activity also increased significantly in PLB compared to quiet natural breathing. In a comparison of sitting postures, the muscle activity increased in the forward-leaning position. These results suggest that in COPD, PLB induced a favorable breathing pattern (increased TV and reduced RR) compared to quiet natural breathing.

(Noppawan Charususin et al., 2013) conducted a multicenter randomized controlled trial to assess the effectiveness of inspiratory muscle training protocol in patients with COPD. 170 COPD patients were selected and divided into control and intervention group. A 3-month inspiratory muscle training was done on intervention group. The finding showed that there was improvement in 6 min walking distance as a primary outcome and inspiratory muscle function, health related quality of life and daily physical activity was improved as secondary outcome.

(Gillespie P et al., 2013) conducted a cluster randomized trial to assess the cost effectiveness of a structured education pulmonary rehabilitation programme (SEPRP) for chronic obstructive pulmonary disease (COPD) relative to usual practice in primary care. 350 COPD patients were selected and grouped into control and intervention group. Intervention group received 2 hr group based training per week for 8 weeks. Incremental costs, Chronic Respiratory Questionnaire (CRQ) scores, quality-adjusted life years (QALYs) were used for data collection. The study result showed that SEPRP was cost effective.
(Tanner RJ et al., 2013) conducted a retrospective cohort study to evaluate the impact of pulmonary rehabilitation on exercise capacity and health related quality of life in patients with asthma and to identify the factors influencing attendance and completion. 49 samples were selected of which 25 completed. Exercise capacity (ISWT), quadriceps maximal volitional contraction (QMVC) and health related quality of life were assessed before and following pulmonary rehabilitation. Logistic regression analysis was used for analysis. The result showed that there was significant improvement in QMVC and ISWT, but no improvement in quality of life.

(Walters J et al., 2013) conducted a cluster randomised controlled trial to assess benefits of telephone-delivered health mentoring in community-based chronic obstructive pulmonary disease (COPD). 1207 subjects were divided into experimental and control group. Experimental group group received regular calls to manage illness issues and health behaviours from trained community health nurses using negotiated goal setting: problem solving, decision making and action planning. The result showed that there was no difference in quality of life between groups, but self-management capacity increased in the experimental group.

(Connolly B et al., 2014) conducted a study to determine the implementation of National Institute for Health and Care Excellence guidance (NICE CG83) for posthospital discharge critical illness follow-up and rehabilitation programmes. Closed-question postal survey design was used. Senior respiratory critical care physiotherapy clinicians were the samples. Survey report revealed that majority offered a follow up service 2-3 months following hospital discharge.

(Basara L et al., 2014) conducted a study to show the impact of PRP's person-centered approach on patient's quality of life (QoL), anxiety, depression and stress levels. Questionnaires were used to measure quality of life, anxiety, depression and stress from 54 samples at the beginning and at the end of a three-week pulmonary rehabilitation program. Each patient underwent an individualized program of education, respiratory exercises, nutrition consultation, and psychosocial/behavioral support and intervention. The results showed significant improvement in all measured parameters QoL (p<0.01), and lowered anxiety (p< 0.01), depression (p<0.01) and stress levels (p< 0.01).
(Ali MS, Talwar D, Jain SK, 2014) undertaken a study to evaluate the results of a short-term pulmonary rehabilitation programme on exercise capacity and quality of life in COPD patients hospitalised with acute exacerbations. 30 samples divided into experimental and control group were selected for data collection using spirometry, six- minute walk test, symptom limited cardiopulmonary exercise test, health-related quality of life, assessment by generic questionnaire medical outcomes study short form (S-F 36) questionnaire and dyspnoea evaluation by Borg score. Mann- Whitney U-test and Wilcoxon Signed Rank test were used for statistical analysis. The result showed that there was significant improvement in general well being and exercise capacity of acute exacerbated COPD patients.

(Wilson AM et al., 2015) conducted a study to evaluate a maintenance programme for patients who completed PR. 148 patients were randomized into maintenance program group and standard care group. Maintenance program included 2 hour every 3 months for 1 year. The Chronic Respiratory Questionnaire (CRQ) (primary outcome), endurance shuttle walk test (ESWT), EuroQol (EQ5D), hospital anxiety and depression score (HADS), body mass index (BMI), body fat, activity levels (overall score and activity diary) and exacerbations were assessed before and after 12 months. The result showed that there was no statistically significant difference between the groups for the change in CRQ dyspnea score.