EXPLORATION OF PSYCHOLOGICAL CORRELATES OF ASTHMA AND DEVELOPMENT OF A MINDFULNESS BASED ASTHMA MANAGEMENT PROGRAMME

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CERTIFICATE

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Table of Contents

List of Tables

List of Figures

List of Appendices

ABSTRACT

Asthma is a common condition characterized by reversible airflow obstruction, airway inflammation, and increased bronchial responsiveness to a variety of stimuli, ranging from allergens and other irritants to strong emotions (National Heart Lung & Blood Institute, 1997). Mere biological models are insufficient as an explanation to the onset, exacerbation and maintenance of asthma symptoms (Wright, Rodriguez & Cohen, 1998). This heterogenic nature of the disease itself marks the need and significance of the present study. Mindfulness has proven to be an effective intervention for many diseases and conditions, when used in conjunction with other modes of treatment. So, the present study attempts to develop a mindfulness based asthma management programme, which is hardly attempted by researchers in the past.

The aim of the study is to explore the psychological correlates affecting the experience and expression of symptoms in patients diagnosed with asthma and to design a comprehensive asthma management program, and to implement the proposed intervention on patients diagnosed with asthma for the fine tuning of the intervention. Current study adopts a multi-method qualitative research design and the method of the study can be elaborated under two broad phases, a pilot phase and a main phase. Pilot phase started with getting familiar with the psychological variable in the context of asthma. An extensive analysis of previous studies was done and an unstructured interview was conducted with Pulmonologists for understanding their perspectives on the psychological factors involved in asthma.

Based on these sources of data, a schedule for semi structured interview was prepared and was later used in the main phase.

The main phase was conducted in a sequential manner. It was further divided into three phases, as Phase 1: Exploratory phase, Phase 2: Intervention development phase, and Phase 3: Clinical trial run phase. In the main phase 1 a semi structured interview was conducted with 36 persons diagnosed with asthma, to get data on various perspective of their experience with asthma, and it was subjected to thematic analysis. The main themes emerged from the analysis were conceptualization of illness, cognitive factors, behavioural factors, emotional factors, familial factors, attitude to treatment, asthma related self efficacy and self concept. For addressing these themes a comprehensive mindfulness based asthma management programme was developed in the 2nd phase of the main study. To make the intervention valid and to reduce subjectivity, data from 3 sources have been triangulated, such as the, analysis of commonly used techniques to address similar symptoms or disorders, analysis of existing interventions for asthma and psychological models behind them, and inferences from the focus group discussion. Based on this, an initial draft of the Mindfulness Based Asthma Management Programme was proposed and subjected to expert validation.

In the third phase, which was aimed at the fine tuning of the proposed intervention, a clinical trial run was conducted on 2 participants, after carrying out a detailed case analysis. Participants gave their ratings regarding their perceived attainment of various target dimensions on a visual analogue rating scale, both in the beginning and at the end of the programme. Their self reports on therapeutic

experience, feedbacks and asthma diary were also analysed for deriving inputs that would help in fine tuning of the programme in terms of its practicability and feasibility.

Keywords: Asthma, exploration, mindfulness, asthma management programme.

CHAPTER I

INTRODUCTION

Asthma is a common condition characterized by reversible airflow obstruction, airway inflammation, and increased bronchial responsiveness to a variety of stimuli, ranging from allergens and other irritants to strong emotions (National Heart, Lung & Blood Institute, 1997). It is a heterogeneous disease, usually defined in terms of its chronicity and symptom severity. It is described by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that varies over time and in intensity, together with variable expiratory airflow limitation. Asthma affects 1-18% of population in different countries. The symptoms and airflow limitation resolve spontaneously or in response to medication (Global Initiative for Asthma, GINA 2018). Asthma has different phenotypes. Phenotypes refer to a recognizable pattern of characteristics such as demographical, clinical and patho-physiological. Major phenotypes are:

1. Allergic asthma: this phenotype has a childhood onset and usually presents with the history of allergic diseases.

2. Non allergic asthma: an independent cluster of asthma symptoms, not secondary to any allergies.

3. Late- onset asthma: it presents itself first time in adulthood and most frequently seen among women.

4. Asthma with fixed airflow limitations: it is a long standing asthma due to airway wall remodelling.

5. Asthma with obesity: asthma symptoms occur in association with obesity.

Pattern of symptom characteristic of asthma

The following are features that increase the probability of having asthma:

a) having more than one symptom (Wheeze, shortness of breath, cough and chest tightness), b) symptoms tend to become worse at early morning or night, (c) symptom vary in intensity and over time d) symptoms triggered by viral infections, exercises, allergens exposure, weather change, laughter, irritants like fumes, smoke or strong smells.

Findings of biological and environmental models of asthma are insufficient to explain these effects. Psychosocial factors contribute to this increase in prevalence and mortality directly as well as indirectly. Mere biological models are insufficient as an explanation to the onset, exacerbation and maintenance of asthma symptoms (Wright, Rodriguez & Cohen, 1998).

Psychological theories applied to mechanisms involved in asthma

A number of diverse perspectives exist, as explanatory models for asthma, ranging from psycho-analytic to family system theories. Though each model differ in terms of its primary focus and content, all of these talk about how various psychological processes contribute as triggers or maintaining factors of asthma.

Psychoanalytic theory

From early 20th century onwards asthma has been conceptualized as a 'psychosomatic disease' (Groddeck, 1925). There are a number of psychological theories and models within the psychodynamic tradition that explain psychosocial

elements in Asthma and how psychological processes associate with asthma symptoms. Though many of these models are not specific for asthma, the mechanism of asthma symptom onset and exacerbation can be explained by the following psychological principles and theoretical models.

According to psychoanalytical view, asthma is a symbolic response to repressed emotions, like repressed crying (Alexander, 1955). The personality characteristic 'Alexithymia', coined and conceptualized later, also brought evidence in favour of psychoanalytic theory. Alexithymia is the difficulty in labelling and expressing emotions (Sifnoes, 2000). It is a construct composed of the following factors a) difficulty in identifying and differentiating feelings from bodily sensations b) difficulty in verbalizing feelings c) narrowed imaginative processes and d) externally oriented cognitive style. Their difficulty in creating mental representations of one's own inner experiences leads to misinterpretation of physical sensations secondary to arousal as symptoms of somatic illness (Tylor, Ryan & Bagby, 1985). It is also proved that people with Alexithymia were more likely to be re-hospitalized. Later based on this assumption empirical researches have been conducted on coping styles and expression of emotions. Emotional coping style has been found to be the one strategy used by asthma patients and contributes to poor health related quality of life. Emotion focused coping involves passive reactions in response to the problems or displacing it like 'taking it out on people' (Hesselink, Penninx, Schlosser, Wijnhoven, Windt, Kriegsman & Eijk, 2004).

Classical conditioning

A neutral or normal stimulus that didn't have an effect on asthma symptoms in the beginning can become a trigger if it is paired repeatedly with an allergen that is known to cause bronchoconstriction. So, these new stimuli can become a conditioned stimuli and capable of eliciting asthma symptoms. Rietveld, Van Beest and Everaerd (2000) did an experimental study to demonstrate the role of classical conditioning in inducing asthma symptoms. They exposed adolescents with asthma to placebo, citric acid at levels that induced cough, or citric acid at 50% of cough inducing levels. Irrespective of the groups, some of the participants were informed that the experiment was to study asthma symptoms whereas the other group was informed that it is about evaluating different flavours. After the exposure, irrespective of the group to which they belonged to, adolescents who were told that experiment was related to asthma reported to have more cough frequencies than the others. Though expectancy can be a factor here, classical conditioning provides the best explanation because cough has a conditioned association with asthma. So the focus on asthma made cough responses to occur more frequently. This theory is more applicable with patients with unexplained triggers for asthma.

Operant conditioning

If classical conditioning acts as a mechanism which facilitates the process of making certain stimuli as triggers for asthma symptoms, operant conditioning works as a maintenance mechanism. The consequences from the environment and the behaviours which worked in the past in terms of resolving symptoms shapes themselves illness related behaviours. Consequences in the patient's environment,

which contribute to asthma management and prognosis, mould their self management strategies. In terms of anxiety associated with asthma symptoms, whatever behaviours helped to alleviate it, such as avoidance of physical activity, increased use of inhalers beforehand, etc., tend to get negatively reinforced and hence are maintained in the behavioural repertoire. However, only limited researches in asthma in relation to operant principles are available due to the fact that, it is a multi-factorial disease, having a strong biological basis, which makes it difficult to attribute learning principles to various dimensions of the disease as in medically unexplained conditions (Schmaling, Smith & Buchwald, 2000).

Cognitive processes

Cognitive factors such as beliefs, attribution, perception, and attitudes have strong role in the way a person experience his or her symptoms, utilization of medical services, treatment adherence and so on. Studies on 'bronchoconstriction' (20% decreases in pulmonary functions) have demonstrated that simply informing patients that they have inhaled a substance (saline water in original) that cause bronchoconstriction, can actually induce the state. A review study summarizing 23 studies in this area found that 36% of participants showed objective evidence of bronchoconstruction in response to suggestions. Results also indicated that women tend to be more responsive to suggestions than men (Isenberg, Lehrer & Hochron, 1992).

Symptom perception or subjective evaluation of changes in the airflow is one of the major cognitive aspects related to asthma. Symptom perception is in fact determined by many psychological factors like mood, anxiety, etc. There is a poor

correspondence between subjective symptom report and objective pulmonary function (Apter, Affleck, Reisine, Tenne, Barrows & wells, 1997). Over symptom perception is associated with unnecessary use of reliever medications and under-perception indicates a potential risk of mortality as it causes delay in availing treatment. The variables patients use to determine the severity of asthma are quite different from those that medical professionals employ (Lurie, Marsala, Hartley, Meunier & Dusser, 2007). Adherence with treatment, especially usage of medicines is an integral part of self management skills, and it is mediated by self monitoring and awareness of possible exposure to triggers.

Apart from treatment adherence, poor symptom perception can be life threatening in persons with severe asthma. Inaccurate perception of respiration has been associated with repressive defensive coping style (Isenberg, Lehrer & Hochron, 1992; Stiener, Higgs & Fritz, 1987)

Based on Rotter's social learning theory three types of believers of control of illness have been proposed. a) Internal locus of control: the belief that one's health outcomes results from one's own behaviour. b) Social externality: other people, especially those who are more powerful than oneself (parents, doctors etc.) are responsible for one's illness control. C) Fatalistic health locus of control: belief that health status is controlled and predicted by luck, fate and other random factors. Fatalistic beliefs are considered to be maladaptive as it is associated with poor initiative on health behaviours in asthma (Goldbeck & Bundschuh, 2007).

Family systems theory

Systemic models basically talk about the family's relationship to children and adolescence with asthma. Minuchin, Rossman and Baker (1978) proposed a classic systemic view on how family dynamics create 'pyscho-somatic' illness in the family. The dysfunctional dynamics such as over-protectiveness, rigidity, enmeshment and poor conflict resolution shape the illness behaviour in the patient. This illness functions as a resolution for the pathological dynamics which otherwise can't be resolved. So, asthma attack is used as a distraction from the continuing family conflicts. Observational studies provide evidence for this systemic perspective that, mothers of children with asthma are found to be more overprotective and critical than mothers of healthy children (Hermanns, Florin, Dietrich, Rieger & Hahlweg, 1989).

Respiratory manifestations of psychological issues

Symptoms of anxiety disorder can mimic respiratory problems and, also, anxiety can occur secondary to respiratory problems. This makes it difficult to make a distinction between these two and to decide on a diagnosis. People with somatoform disorders have high preoccupation with bodily sensations, and unexplained respiratory problems (Labolt, Preisman, Torosian, Popvich & Iannuzzi, 1996). Paradoxical vocal cord dysfunction (PVCD) shares some features common with asthma symptoms. But provocation tests of airway hyperactivity are usually negative for this condition. Patients having PVCD tends to get better with behavioural techniques, allowing breath to occur naturally. Factitious patients are found to assume a sick role when they have some pulmonary symptoms.

Psychogenic cough, functional aphonias and dysphonias, and paroxysmal sneezing are the other somatoform issues which mimic with asthma (Labolt & Innuzzi, 1998).

Psychological issues in asthma

High rates of psychiatric disorders have been reported in people with asthma. Almost two third of asthma patients have reported to have life time history of at least one psychiatric disorder, within which around 40% and 10% of patients had histories of panic disorder and depression respectively (Afari, Schmaling, Barnhart & Buchwald, 2001). Prevalence of anxiety disorders such as panic disorder (12%), agoraphobia (12%), social phobia (7%), post traumatic stress disorder (6%), generalized anxiety disorder (9%), specific phobia (10%) are considered to be high when comparing to the general population (Weise, 2007). Co-morbid psychiatric conditions influence symptom perception and treatment seeking behaviour which in turn affects mortality as well as prognosis (Priel, Heimer, Rabinowitz & Hendler, 1994).

Compared to healthy controls asthmatic children have more anxiety symptoms (Vila, Nollet-Clemencon, de Blic & Simeoni (2000). Children with asthma are found to have low self esteem and social competence (Vila, Nollet-Clemencon, Vera, Robert, de Blic, Jouvent, Simeoni & Scheinmann, 1999). While studying families of patients with asthma, high rates of substance abuse, mood disorders and traits of antisocial personality disorder were reported (Wamboldt, Weintraub, Krafchick & Wamboldt, 1996). Psychological issues in adult asthma are a little different from this, as the most frequently associated problems are depression, panic and agoraphobia (Shavith, Gentil & Mandetta, 1992). Panic and

anxiety can directly exacerbate asthma symptoms through hyperventilation, and it is associated with overuse of medications, with more frequent hospital admission and longer hospital stays. This may be due to the common respiratory element in both conditions (Carr, Lehrer, Rausch & Hochron, 1994). Panic can trigger as well as exacerbate asthma and asthma can cause to develop panic. The relation between these is considered to be bidirectional. One explanation is that panic is associated with psycho-physiological stress responses, which in turn elicit autonomic and inflammatory responses in persons with asthma. On the other hand, dyspnea and other related body sensations in asthma can trigger panic (Perna, Bertani, Politi, Colombo & Bellodi, 1997). Hyperventilation is another common feature between the two, as it can cause bronchoconstriction and drying of the airways (Guilbert, Fouke & McFadden, 1988). Strong emotions elicit breathing difficulty in pulmonary patients. This make them avoid social and emotional situations, termed as 'emotional straitjackers' (Dudley, Wermuth & Hague, 1973). Depression is also found to be highly prevalent among patients with asthma. The life time prevalence of depression is two and half times higher than the general population. This high rate of depression is secondary to the losses they experience in association with the disease and long term adjustment they had to make in their lives (Kessler, McGonagle, Liu, Swartz, & Blazer, 1996).

Though initially researches were in consensus that patients with asthma showed perceptual and motor impairments (Dunleavy& Baade, 1980), later it was found that these are secondary to steroid use and are very transient.

Psycho-social management of asthma

Psychosocial management refers to addressing various psychological and social variables affecting asthma, with the aim of identifying and reducing its triggering as well as maintaining effects. It starts with receiving a referral of the case, and go through assessment of various psychological factors and finally deciding and implementing of the right intervention.

Referral

Referral from a pulmonologist can be received under two conditions: to manage acute conditions or to deal with chronic cases. In an inpatient set up, consultation might be usually requested to deal with acute concerns. A patient in the intensive care unit may be referred to evaluate for his or her anxiety, or to make himself ready to take medical decisions like withdrawing or withholding of life sustaining treatment/equipments. It is a common response that, patients sometimes feel fearful and sceptical about weaning from a ventilator. From the clinical point of view depression and anxiety are the common issues to be addressed here (Yellowlees, Haynes, Potts, & Ruffin, 1988).

In the case of chronic problems, it’s quite different from the above scenario because what the patient requires is long term psychological management. It demands addressing adjustment to a chronic condition, stress management, interpersonal conflicts (with family as well as health care providers), compliance with treatment, smoking cessation and somatisations.

Assessment

Assessment will depend on the need for referral and the context. Primary data for assessment is patient's medical records. It encompasses history and course of medical problem, medications, current as well as past treatment, other related medical issues, pulmonary function test (PFT) and lab results. Along with this clinician's subjective impressions about the patients such as being anxious or uncooperative, etc., are also included. These are the areas to be assessed. The most significant source of information for asthma is the patient himself/herself as it provides a platform for discussions and clarifications. Interview with the patient touch the cognitive, behavioural, emotional and familial domains. It also reveals socio-occupational dysfunctions, if any. Psychiatric history and symptomatology associated with asthma is important to be assessed since there is high co-morbidity between asthma and anxiety and depression (Kessler, McGonagle, Zhao, Nelson, Hughes, Eshleman, Wittchen & Kendler, 1994). After a detailed evaluation, standardized tests can also be administered. Checking for differential diagnosis is highly recommended as some of the somatic symptoms like weight loss, fatigue, and decreased energy can be secondary to respiratory issues than being the symptoms of depression. However, significant changes in mood and behaviour such as decreased interest, hopelessness, and suicidal ideations could usually be a sign of depression. Respiratory and psychological symptoms can often occur simultaneously and mimic each other e.g., a patient with asthma may end up in experiencing a panic episode and thereby further worsen his Asthma-related problems (Thoran & Petermann, 2000).

Changes in cognitive functions can be seen in pulmonary patients, because of prolonged oxygen deficiency in the brain (Dodd, Gestov & Jones, 2010). This can result the clients to end up in a state where they are unable to comprehend medical instructions, to engage in psychotherapeutic relationship or to carry out adaptive self care skills efficiently. A formal mental status examination and tests of cognitive functioning is hence significant. Tools like Mini Mental State (MMS) are used for cognitive change (Folstein, Folstein & McHugh, 1975). Evaluation of psychological adjustment and coping through self report is also a significant piece of information. Interview with family members and relatives can provide information the client might not gave. It also helps to verify and cross check the client's versions.

Psychological interventions in asthma

Asthma as a multi-factorial chronic disease having psychological co morbidities of psychiatric diseases is high in asthma demands for more integrated management approaches (Boulet, 2009). Though the pharmacological management has a strong evidence base, poor symptom control remains to be a major issue for health care professionals as well as for patients which signifies the relevance of incorporating psycho-social interventions in asthma as part of a comprehensive asthma management system (Yorke, Fleming & Shuldham, 2006).

Many forms of psychosocial interventions individually and in combination are proved to be effective for the management of asthma. The diverse intervention approaches ranges from behavioural and cognitive therapies to relaxation techniques and therapeutic writing. Common psychological interventions used for the management of asthma are psycho-education, behaviour therapy, cognitive

behaviour therapy, relaxation training, therapeutic writing, bio-feedback and other self-regulation techniques.

Psycho-education is one of the most frequently used strategies for asthma. It is a comprehensive intervention encompassing imparting knowledge of the illness to the patient and family, modifying their attitudes to illness. Apart from providing information for asthma control, training in self management and addressing psychosocial issues are part of psycho-education programs (Boulet, 2015).

Another widely applied approach is behaviour therapy. Behavioural therapy is focussing on identifying and changing maladaptive leanings that have been contributing to the maintenance and worsening of symptoms. Behaviour modification techniques have been incorporated such as stimulus control, bio-feedbacks and effective use of reinforcements for treatment adherence (Put, Bergh, Lemaigre, Demedts & Verleden, 2003).

Cognitive behavioural therapy incorporates identification and changing unhelpful thoughts such as “I am not going to have any change”, I will remain as a chronic patient throughout my life”, etc., along with addressing behavioural factors. It is helpful for people who have exaggerated fear of asthma attacks, those then actually elicits respiratory symptoms. Constructive management of these thoughts are targeted in cognitive behaviour therapy (Kew, Nashed, Dulay & Yorke, 2016).

Relaxation techniques helps to consciously produce a state of relaxed state characterized by lower blood pressure, slow breathing and a subjective sense of calmness. Techniques such as progressive muscle relaxation, meditation, autogenic

training, and hypnosis have been extensively used for asthma rehabilitation programmes (Huntley,White & Ernst, 2002).

Therapeutic writing – a method for primarily ventilating conflicting inner experiences found to be used as part of psychological management of asthma. It takes the form of diaries, letters, or any other form of written emotional disclosures. Therapeutic writing can be done in two ways. One is facilitated, in which a facilitator present during writing, and the second type is un-facilitated, where in writing is carried out without any assistance (Smith, Helen, Jones, & Christina, 2015).

Bio-feed back is known for monitoring and controlling biological indicators of anxiety or stress. Here feedback is utilized as a reinforcement which in turn strengthens the attempts of regulation of the biological indicators of asthma (Kew, Nashed, Dulay & Yorke, 2016).

Other self-regulation methods like yoga, meditations and mindfulness have been proved to be effective for the management of asthma. Yoga is found to show improvements in symptoms of asthma and well being. However studies on this suggest that the perceived benefits are on subjective symptoms than objective physiological measures (Agnihotri, Kant, Mishra & Singh, 2015). Mindfulness meditation is one of the self regulatory techniques being tried out in asthma management programme (Shi, Liang, Gao & Huang, 2017).

Mindfulness

Mindfulness can be defined as the awareness that arises through "paying attention in a particular way: on purpose, in the present moment, and non-judgementally" (Kabat-Zinn, 1994). This definition of mindfulness connects its philosophical origins of the past with that of the practical methodology of the present.

The Buddhist ideology places the origin of human suffering in the ignorance of the moment-to-moment awareness of the inner experience and the resultant dissatisfaction. It considers mindfulness as one among the four basic faculties of awareness, which are: faith (sraddha), wisdom (prajna), concentration (samadhi), mindfulness (smrthi) and vigor (virya). Mindfulness is also mentioned in the Buddhist narrative in many other contexts of human salvation and enlightenment. The word 'smrthi' which is believed to be the origin of the term 'mindfulness', is found in the ancient Buddhist literature, dating back to third or second century BC, written in 'pali' language.

There has been much debate among those working in the area of mindfulness whether 'Smrthi' denotes memory or attention. As Brown, Creswell and Ryan (2015) has rightly pointed out, these debates could be resolved to a great extend if we take the meaning of 'memory' as being more similar to the concept of 'working memory', rather than long term or short term memory, put forward by Baddeley and Hitch (1974). Here, memory becomes both a 'store' and a 'state' which in turn can contain the larger meaning attributed to the term 'mindfulness'.

In modern psychology the study of consciousness was almost given up by the rise of Behaviourism in the early 20th century. However, the evolution of cognitivism during the 1960s brought back some interest in the area of consciousness. It was even later that mindfulness was integrated into the stream of cognitive psychology framework, largely through the works of Kabat-Zinn (1990) and Segal, Williams and Teasdale (2002), developing such therapeutic approaches like Mindfulness Based Stress Reduction (MBSR) and Mindfulness Based Cognitive Therapy (MBCT). Since then, a lot of interest has been invested in this area by psychologists-including researchers, academicians and practitioners. According to Brown, Creswell and Ryan (2015) the number of articles produced and researched conducted on the topic have increased exponentially since the early 2000s.

The current scenario

Mindfulness is a term that is used in a variety of ways. Different people working in the area of 'mindfulness' assign different meanings to this term so as to fit their own perceptions regarding what they do. Whether it is ancient Buddhists, modern day therapists, or cognitive theorists, definitions rarely co-exist. However, the evolution of 'mindfulness' from an ancient Buddhist routine practicum to a carefully and widely used clinical- therapeutic method engrosses the huge theoretical investment from the part of Psychological science, perhaps than any other field of knowledge. Psychological theories and principles that shape the structure of 'mindfulness' can be summarized under four levels of analysis such as:

1. Attention

2. Perception

3. Self determination and

4. Learning- supportive environments

The Attentional Process and Networks of Attention

Empirical studies have identified that there exists three attentional networks such as alerting, orienting, and executive attention- in both functional and anatomical terms. Alerting is a kind of vigilance which is regulated largely by noradrenalin. The function ‘orienting’ is controlled by brain areas such as superior parietal lobe, superior colliculus, the temporal-parietal junction, etc. This junction mainly involves the selection of specific information from sensory inputs. The executive attention component involves the anterior cingulate cortex, the anterior insula, the prefrontal cortex and basal ganglia (Peterson &Posner, 2012).

During mindfulness, the executive attentional network, of all the three, is the most manipulated domain.

Mindfulness in the context of perception and awareness

Mindfulness and mindfulness training can also be explained in terms of ‘processing mode’ which refers to the style of thinking adapted by the individual while processing information related to self and in general. Researchers have found evidence for the connection between many psychological disorders, especially depression, and the style of thinking. Three most important concepts worthy to be

mentioned in this context are ‘Cognitive reactivity’ (Segal, Kennedy, Gemar, Hood, Pedersen & Buis, 2006), ‘Rumination’ (Ingram, 1990) and the ‘Interactive cognitive subsystem (Teasdale & Bernard, 1993). Higher cognitive reactivity which refers to the mode of processing whereby individuals worry about their depression (depression about depression) has been found to be strongly associated with depressive relapse.

Rumination, on the other hand, has been found to predict the onset of major depressive episodes. It also has connection with the severity of depressive symptoms.

The ICS (Interactive Cognitive Subsystems) put forward by Teasdale and Bernard talks about the relationship among qualitatively different kinds of information in the brain such as visual, acoustic, implicational, etc. Each of these subsystems happens to be mutual inputs and outputs of each other systems alternatively. Research in this area has shown that ICS framework is successful at bringing out cognition-based evidences for the occurrence and maintenance of many psychological disorders such as depression and the related rumination. For this reason, the proponents of ICS framework have suggested that patients recovered from depression must be given training in mindfulness on order to reduce the risk of future relapse and recurrence. This even provided the foundation for the development of MBCT (Mindfulness Based Cognitive Therapy, Segal, Williams & Teasdale, 2002).

Mindfulness in the context of motivation and self determination

Understanding ‘mindfulness’ within the framework of ‘self-determination’ and ‘awareness’ is very important due to many reasons, the major one being that mindfulness by definition is an ‘intentional’ process and a voluntarily carried out cognitive practice. According to the self determination theory, there are two types of motivation namely autonomous motivation and controlled motivation. Researchers have shown that autonomous motivation gives rise to behavior and attitudes which last longer and go deeper. They experience more positive emotions and greater psychological wellbeing (Deci & Ryan, 2012). The prototype of autonomous motivation is ‘intrinsic motivation’, which concerns people’s engagement in an activity because they find it interesting and enjoyable. On the other hand, controlled motivation is comprised of two types of extrinsic motivation such as external regulation and internal regulation. People possessing these later forms of motivation have been found to have lower degree of satisfaction of their basic psychological needs.

Intrinsic and extrinsic motivation can also be understood in terms of varying levels of awareness. In extrinsic motivation, people tend to have lower awareness compared to intrinsic motivation. Classic extrinsic motivators such as rewards and punishments can decrease individual’s awareness because they are focused on the external contingencies and pressures. As the motivation is internalized, people’s autonomy for the behavior increases, so, too, does their awareness.

Central to mindfulness is the idea of ‘allowing’ rather than deliberately manipulating experience, which includes allowing inner chatter and demands,

without attaching to or indulging them. This entails a kind of ego-detachment, which helps facilitate autonomous motivation because behavior can be informed by a non-judgemental awareness instead of the distorted self cognitions associated with pressures and ego- involvements.

Mindfulness in the context of cognitive and behavioural models

This is related to understanding mindfulness within the framework of learning processes and the social environmental characteristics. There are different psychotherapeutic techniques, hailing from these two traditions, which largely incorporate the philosophy of mindfulness. Mindfulness based cognitive therapy (MBCT), metacognitive therapy, acceptance and commitment therapy (ACT), dialectical behavioural therapy (DBT) - to name a few. All these therapies make use of the principles and techniques formulated by the contextual perspectives in Psychology- both behavioural and cognitive- behavioural perspectives. So, learning-supportive environments (including those processes happening 'inside' the organism- as explained by the cognitive model and those happening 'outside' the organism- as explained by the behavioural models) defines one important framework within which mindfulness is comprehended inside the psychological science.

Neurobiology of mindfulness

Recent developmental studies in the area of mindfulness claims that mindfulness based interventions can improve a wide range of physical and mental

outcomes. Neuro-imaging studies began to tap the brain mechanisms contribute to these outcomes and try to answer ‘how mindfulness engages the brain over time’.

The neurobiology varies based on the type of mindfulness based programme and the duration of practice. However anterior cingulate cortex (ACC) and prefrontal cortex are associated with early stages of mindfulness training as well as in people with high dispositional mindfulness. Across all meditation training the areas associated with sensory appraisal are highly activated such as anterior insula and somatosensory cortex. However as the mediator being more skilled at being aware of sensory and emotional information without engaging in interpretation, a decrease in higher order brain areas and an increase in the sensory processing areas can be found. Prolonged mindfulness meditation is associated with significant reduction in neural structure associated with emotional processing (Amygdala) and sensory awareness (Insula).

Four days of mindfulness training found to attenuate secondary somatosensory cortex, which influences the modulation of nociceptors or pain processing. Meditation related pain reduction is associated with low level of nociceptor activation due to widespread thalamic deactivation (Zeidan, Martucci, Kraft, Gorodn, McHaffie & Coghil, 2011).

The eight week mindfulness based stress reduction programme (MBSR) is a weekly guided, therapeutic programme involving daily practice of meditation using audio recordings (Kabat-Zinn, 1990). Practice of MBSR is associated with significant reduction in clinical anxiety (in generalized anxiety disorder), and amygdale activity (Goldin & Gross, 2010), and activation of regions supporting

reappraisal (Goldin, Ziv, Jazaieri, Hahn & Gross, 2013). Similar mechanisms have been replicated in healthy adults also that when instructed to mindfully attend to the sounds of MRI scan, Kilpatrick and colleagues (2011) found that it induced robust functional neural connections between bilateral anterior and posterior inusla, the medial prefrontal cortex and anterior cingulate cortex (Farb, Segal, Mayberg, Bean, McKeon & Fatima, 2007). In short, brief mindfulness meditations is associated with reduction in lower level sensory processing (Deactivation of thalamic and somatoensory cortex) and activation of executive level brain regions (Prefrontal cortex). In contrast to this, long-term mindfulness practice produce neural activity associated with higher order awareness, indicating improved acceptance of sensory experiences without engaging interpretation or elaboration (Brefczynski, Lewis, Lutz, Schaefer, Levinson & Davidson, 2007).

Clinical applications of Mindfulness

Mindfulness has been utilized inside the clinical settings for dealing with a variety of psychological and medical problems. There are mainly four vastly used therapies which are essentially based on mindfulness. They are:

1) Mindfulness Based Stress Reduction (MBSR): This is one of the earliest integration of mindfulness into clinical practice developed by Kabat-Zinn in 1979 (Kabat-Zinn, 1990). It was originally intended for managing pain, enhancing self regulation and emotion management among patients with chronic pain. Later MBSR was applied to wide variety of chronic medical illnesses (Carlson, Ursuliak, Goodey, Angen & Spec, 2001), psychological conditions like anxiety and mood disorders (Hofmann, Sawyer, Witt & Oh,

2010) and found to improve patients quality of life and decreased psychological distress.

2) Mindfulness Based Cognitive Therapy (MBCT): This was designed by Zindel Segal, Mark Williams and John Teasdale in 2002, which is used for patients with depression. MBCT combines some elements of cognitive therapy with the practice of mindfulness and has proven to be very effective, especially in preventing relapse of depression.

3) Dialectical Behaviour Therapy (DBT): It is a well accepted therapy for persons with borderline personality disorder. The core skill implemented in DBT is mindfulness, based on which all the other skills been trained. The "what" skills and "how" skills, based on mindfulness found to be effective in the synthesis of the "logical" and "emotional" mind (Linehan & Wilks, 2015).

4) Acceptance and Commitment Therapy (ACT): ACT is an intervention developed through combining elements from behavior modification strategies, acceptance, and commitment and mindfulness strategies. This is used effectively with chronically ill individuals to increase their psychological wellbeing and flexibility (Hayes, Strosahl, & Wilson, 1999).

Anxiety disorders are often conceptualized as a *fear of fear* that results in high levels of subjective distress, somatic symptom manifestation, and disruption of daily living (Barlow, 2002). Standard treatment approaches for clinical anxiety

include psychotherapy and medication, both of which are intended to modulate cognitive, affective, physiological, and/or behavioral reactions to perceived threat.

Traditional approaches to treat anxiety disorders fundamentally involve attempts made by both the therapist and the client to change or lessen this anxiety to a more logically right and/or practically valid levels. Whether it be CBT, BT or any other technique, the approach is always change-based. Instead, mindfulness based approach for the treatment of anxiety disorders emphasize on establishing a wise relationship with the inner experience of anxiety. Here the approach is always acceptance-based (Sado, Park, Ninomiya, sato, Fujisawa, Shirahase & Mimura, 2018). It capitalizes on the fact that the psychological experience of anxiety is invariably associated with physiological and bodily reactions. Mindfulness starts with creating awareness in the individual about the inner world and the outer world. It demands the individual to understand that anxiety, fear or any emotion or thought associated with it is a part of one's being. One doesn't need to avoid it or to get rid of it. Rather mindfulness enables a person to become consciously aware of one's own physical and physiological sensations. The assumption here is that, when attempting to rigidly avoid the inner experience of anxiety, like what traditional Western therapeutic approaches have been doing, one not only fails to address the real problem but it further reinforces chances that one would be in a more miserable condition in the future (Jacobson & Newman, 2014). Instead, when one is able to attend to his inner feelings chances are good that a more positive relationship develops between the self and the inner physical-physiological experiences. In other words, 'Self-regulation' is in the making (Hauke, 2005). By awakening to the

possibilities available in the present moment, one often becomes empowered to choose a wise response in the face of an upsetting internal experience or external event, as opposed to having an upsetting experience or event dictate how one responds.

Mindfulness Based therapy for OCD tries to develop a way to trust and validate one's internal experiences. Since OCD majorly involves thought distortions and obsessions, mindfulness integrated psychotherapy aims at repairing the dysfunctional relationship with one's private inner experiences (Fairfax, 2018).

Depression is one of the most prevalent psychological disorders of this era. Conventionally, the strongest of all approaches used to treat depression today is considered to be Cognitive Behaviour Therapy developed primarily by Aaron Beck (1964). Treatment for depression based on the mindfulness approach, specifically called as 'Mindfulness Based Cognitive Therapy' for depression (MBCT) was developed by Zindel Segal, Mark Williams, and John Teasdale (2002). This approach focuses on acceptance and change. It enables a client to become more aware of the cognitive processes and urges one to respond differently to the negative feelings and cognitions. By consistently practicing bringing awareness to present moment experience, participants shift into a mode of functioning that is incompatible with the self-focused and analytical cognitive processes that perpetuate depressive states. Segal et al. (2002) describe this as change from a "doing" mode, in which the main focus is on the reduction of discrepancies between the current state and ideas of how things should be or ought to be through problem-solving

behavior, to a mode of “being,” in which the individual is in immediate and intimate contact with present moment experience, whatever that experience might be.

Borderline Personality Disorder (BPD) is a disorder in which the person is incompetent in regulating his own emotions, behavior and relationships. Many factors make the treatment for BPD highly difficult- co-morbidity, comparatively high risk of lethality (arising out of suicides) and troublesome therapist-client relationship being the most significant ones.

The most successful intervention for BPD is considered to be the Dialectical Behaviour Therapy developed by Linehan and Wilks (2015). This too is a Cognitive Behaviour Therapy loaded with ‘acceptance’ strategies. DBT is the first therapeutic approach in psychology to adapt the idea and philosophy of mindfulness. As per the statistics available since 2007, studies using nine randomized clinical trials have brought-in evidences in favour of DBT as the most successful treatment for BPD.

The core element of DBT in persons with BPD is to bring the attention to the present moment, by letting the past memories go away and to stop worrying about the future. During a therapy session, a patient is asked to recollect a negative incident in his or her life, which very often happens to be issues relating to partners. Mindfulness skills are used within sessions, then, to help the individual begin to regulate his or her emotions in an effective manner. Mindfulness practice helps a client with BPD in four overlapping ways: (a) increasing attentional control, (b) increasing awareness of private experience, (c) decreasing impulsive action, and (d) increasing self-validation (Lynch, Chapman, Rosenthal, Kuo, & Linehan, 2006).

Apart from this mindfulness based interventions found to be effective in addressing psychological factors in many of the general medical conditions such as in cancer, coronary heart disease, fibromyalgia, rheumatoid arthritis, irritable bowel syndrome, Diabetes, acquired immune deficiency syndrome (Carlson, 2012). Mindfulness was also found to effectively address anxiety in persons with asthma. Mindfulness medication decreases asthma symptoms along with enhancing overall quality of life (Cheryl, Karen, Nilani, Melissa, Gabriel & Marisa, 2017). Attentional control, Mood clarity, cognitive change, exposure, control, acceptance and relaxation are the major mechanisms by which mindfulness based interventions works (Raj & Kumar, 2019).

Review of relevant related literature

A large body of empirical works has been conducted in the areas of asthma as well as mindfulness. A review of literature on these aspects is provided here.

Psychological Correlates of Asthma

The chronic conditions have many general stressors in common although their biological backgrounds, medical treatment and diagnostic categories vary significantly. People having chronic health conditions hardly differ in their perceptions of a number of important stressors like life-threateningness, progressive deterioration, controllability and fatigue. Differences in the degree and type of stressors exist, however, this cannot be explained by a single factor-i.e., the type of disease. Personal characteristics such as age, gender, age living situation, and

education level, personality seem to be important as well (Heijmans, Rijken, Foets, de Ridder, Schreurs & Bensing, 2004).

Quality of life in asthma

Quality of life is the multidimensional concept involving the physical, psychological and social impact an illness has on a person's life. In the context of asthma it refers to the impact of illness on daily life functioning of patients. A number studies have demonstrated that quality of life is highly compromised in asthma, especially in poorly controlled asthma.

Personality is one of the factors associated with quality of life. People with high extraversion and agreeableness and low neuroticism found to have better quality of life and it is mediated by coping strategies one use and symptom reporting. One explanation for this is that, people high on extraversion and agreeableness tend to have more friends and give less attention to the physical difficulties, which might helping them to keep relaxed. In terms of symptom reporting agreeable people hide their asthma symptoms less, which in turn predict better quality of life. Utilizing a large community sample and inclusion of people with different range of asthma severity enhances the external validity of the research findings (Ven & Engles, 2011).

Impaired quality of life is associated with psychiatric diseases and clinically significant levels of subjective distress in occupation asthma. The important fact is that these pathological difficulties persist even after stopping their exposure to triggers in the work place. The study utilized objective methods like spirometry,

measures of bronchial hyperactivity and inhalation tests, which enhances the credibility of findings (Miedinger, Lavoie, Archeveque, Ghezzo & Malo, 2011).

Phenotypes of asthma not only differ in presentation, but also in terms of quality of life. Work related asthma is a phenotype, which include both occupational asthma and work-exacerbated asthma. Comparing to non work related asthma, this phenotype is found to have more impairment in mental health, physical health and activity limitations. However these findings should be taken with caution, as the nature of work and availability of facilities at work places would be different across different occupations (Knoeller, Mazurek & Moorman, 2012).

Similarly children with better asthma control found to have higher asthma-specific quality of life (HRQoL). However this relation is directly as well as indirectly influenced by some of the parental factors such as sense of self-efficacy with patient-physician interaction, health literacy and satisfaction about shared decision making. Parents with high health literacy would have an active role in interaction with their physician and contributes to a voice in decision making, suggesting the relevance of involving family in the asthma management programs. (Gandhi, Kenzik, Thompson, de Walt, Revicki, Shenkman & Huang, 2013).

Positive effect of quality of life was studied on many psychological variables, and it was found to predict better compliance with treatment among patients with asthma. This suggests the possibility of increasing treatment adherence by enhancing the quality of life through various asthma management programs. A contradictory result was also obtained from the same study showing that despite of a decrease in compliance with medication, asthma control remains to be same. One

possible explanation for this finding is that the study was conducted on adolescence, in which symptoms tend to usually disappear during puberty (Though it can re emerge later) so that medication would no longer required for them (Tiggelman, Ven, Schyack & Engels, 2015).

A cross sectional study by Avsi and Dogen (2016) reports sexual dysfunction in patients with asthma, whose quality of life is low. A gender difference was also observed about it that women had lower quality of life than men, however authors suggests that these findings should be taken cautiously as gender inequality and roles attributed to women might have influenced. This finding implies that a multidisciplinary approach should be used in the treatment of asthma by evaluating various domains of psychosocial functioning including sexual dysfunctions.

Psychological risk factors in asthma

Objective measure of respiratory function like Peak Expiratory Flow Rate (PEFR) is affected by psychological variables. Most extensively investigated psychological variables are primarily related to environmental factors like, exposure to pollutants, smoking and allergens etc. Different from these, variables like nature of daily activities, mood, distress, locations, and social contacts are studied and found to influence PEFR and asthma symptoms. Diurnal cycles of these variables in turn affect diurnal variation of PEFR and symptoms (Smyth, Soefer, Hurewitz, Kliment & Stone, 1999).

A study conducted to find out the relations between psychosocial factors and the development of respiratory symptoms is noticeable by its methodology, where

the children were prenatally assigned to various degrees of risk for developing asthma on the basis of family history of allergic and respiratory disease. Parents were taken as informants of their children's behavioral problems, anxiety, family relationships and completed questionnaires measuring those variables when their children were 3 years old. Findings suggest that children with indications of asthma symptoms are at higher risk of developing behavior problems (Calam, Gregg, Simpson, Morris, Woodcock & Custovic, 2003).

Considering prevalence, in terms of gender differences, women had a 1.64 times greater odds of current asthma as compared to men. The odds of both current and probable asthma are around two fold greater for people with obesity (Arif, Rohrer & Delclos, 2005).

Co-occurrence of psychiatric morbidities and asthma has been replicated in a large number of studies. However the basic mechanism of this link was not well established. A study by Van Lieshout and MacQueen (2008) suggests that psychological stress modulates asthma symptoms through certain specific biological pathways. In asthma patients, anterior cingulate cortex (ACC) and insula found to be hyper responsive to asthma-related emotional cues and afferent physiologic signals (The ACC receives input regarding key physical symptoms such as shortness of breath or palpitations, in asthma) Similar areas of activation can be seen in depression also.

Treatment adherence is predicted by certain personality traits such as high extraversion, low social desirability and high externality. Asthma patients with low adherence are high on extraversion in comparison with those with good adherence.

Patients with poor adherence don't form a causal connection between their life events and actions, indicating an externally oriented locus of control (Halimi, Godard, Pithon, chane & Varrin, 2010).

Baiardini, Sicuro, Balbi, Canonica and Braido (2015) conducted a review study by analyzing 5510 articles addressing different psychological key concepts, constructs and variables relevant in asthma. Results can be classified under 2 broad spectrums such as mental health aspects and psychological aspects. Psychological aspects are a) subjective perception (Poor symptom perception may result in overuse of reliever medication, irrespective of lung function, whereas under-perception is associated with risk of delayed treatment) , b) alexithymia (impaired ability to build mental representations of their emotions, and therefore they misinterpret physical symptoms related to emotional arousal as symptoms of somatic diseases and c) coping style (avoidant coping like ignoring, denying, or avoiding a problem). Anxiety, depression is included in mental health related factors category.

In the similar line another review study was carried out on the psychological factors of asthma in Arab culture. This brings out a number of major observations such as (a) Knowledge and attitudes on asthma of parents, physicians, school staffs found to be generally unsatisfactory (b) Quality of life in children and adolescents was significantly limited by asthma, (c) Among children asthma was a common cause of school absenteeism an affected their academic achievement (d) Childhood asthma is associated with increased rates of both internalizing and externalizing problems e) Asthma education programs has a major impact on parents, staffs, and asthma management practices (Al-khateeb & Al-khateeb, 2015).

The risk factors associated with asthma leads to both exacerbations as well as morbidity, and they originate from wide ranges of sources such as environmental, behavioral, and psychosocial. Among which psychosocial factors underwent great attention and research. The most prominent psychological risk is lower quality home environment, family conflict, high crime rates violence, poverty, housing-related stress, and chronic family stress. Many of these risk factors have complex interactions and bidirectional relationships (Booster, Oland and Bender, 2016)

Psychiatric co-morbidities in asthma

The relationship between asthma and the experience of negative emotions, such as anxiety, anger, and sadness has been extensively studied. Exacerbation of asthma occurs in response to emotional wave and in general asthmatics reports that they experience as well as express a lot of negative emotions (Lehrer, Isenberg & Hochron, 1993).

A number of psychiatric conditions appeared as co-morbid with asthma, mainly anxiety and mood spectrum disorders. Panic disorder is one of the highest co-morbid conditions for asthma. On the other hand presence of asthma is a risk factor for developing of panic disorder. One mechanism of this bidirectional connection is that the anxiety associated with panic disorder causes hyperventilation which in turn elicits asthma symptoms. Similarly experiences of asthma symptoms make someone hypervigilent about obstructions in respiration and can lead to the development of panic disorder. This may be due to the common respiratory element in both conditions (Carr, 1997).

Bray, Kehle, Grigerick, Loftus and Nicholson (2008) found that the psychological problems that children experience comorbid with their asthma generally involve internalizing behavior disorders, with anxiety and depression being most prevalent.

Individual characteristics predict asthma control. Women, people who are obese, older and depressed or anxious found to have more impairment in pulmonary functions (Marco, Verga, Santus, Giovannelli, Busatto, Neri, Girbino, Bonini, & Sentanni, 2009)

Stress found to be high among patients with asthma when comparing to normal population. Stress can both accelerate the onset and maintain the symptoms for long time. Coping strategies they use are also less of problem focused than others (Nia, Aliloo & Ansarin, 2010).

Both trait anxiety (a disposional tendency for being anxious) and state anxiety (anxiety at the present time and is variable) found to be high among asthma patients. 70% of asthma patients, from a sample size of 195, manifested anxiety on objective measures. This indicates extend of co-morbidity and the need for management of psychological elements in asthma (Fernandes, martins, Pereira & Branco, 2010).

Attitude and compliance with treatment and sense of control over the disease are influenced by the presence of psychiatric co-morbidities. Both internalizing and externalizing problems found to have a similar role. However rather than the severity of asthma, the coping strategies one use actually influence the relationship

between treatment compliance and the presence of psychiatric conditions. Denial and other emotion focused coping strategies are associated with emergency hospital visits and near fetal asthma exacerbations (Barton, Clarke, Sulaiman & Abramson, 2016).

Interpersonal and social functioning in asthma

Most of the studies in the domain of interpersonal and social functioning in asthma are conducted with children diagnosed with asthma; probably they are the most potential group on which family dynamics and interaction pattern are centered.

Similarly, psychological and social problems in asthmatic children have also been subjected to exploration. Asthmatic children had fear of death due to suffocation, and it affected children in the following ways that it interference with their play, participation in small domestic works, and they have a feeling of being a burden to their family. These factors found to be high among children, whose mothers have insufficient partner support, lower education and skilled occupation. Polygamy, presence of more than 5 children in family was also associated with psycho-social morbidities (Tunde-Ayinmode, 2015).

There is a contradictory finding revealed that psychosocial differences of children with asthma, children with bronchial hyper activity and normal children are less than expected and the assumed differences are due to secondary psychosocial factors than by the direct effect of the disease. The only domain found to be affecting asthmatic children was quality of sleep. They sleep less well than children of other two groups. This indicates that the biological factors are compromised than

psychosocial. Learning habits, level of activity, communication skill, and affection are intact and not significantly compromised in asthmatic children (Wjst et al., 1996).

Schmaling, Afari, Barnhart and Buchwald (1998) conducted a study among couples, with one of each pair having/had mild to moderate asthma, with an aim of examining the association of relationship satisfaction and the condition. The results showed that relationship satisfaction varies (27% variance in a negative direction) in connection with greater asthma severity and greater use of asthma medications.

The adverse effect of asthma is not just limited to the patients, but also to the significant family members. Relationship between the severities of asthma among children and their quality of life and that of their primary caregivers has been studied in a research. Data was collected through telephonic interview from parents of children of 5-12 years, diagnosed with asthma. History, severity, socio economic status, management, parents' knowledge on illness etc. were taken into account, and on this basis asthma severity has been calculated. Result showed quality of life was compromised in both children and parents, and it was negatively correlated with asthma severity and number of schooldays they missed. However the study has one major limitation that the children's quality of life was reported by their caregiver which might have contributed to slightly biased responses (Williams et al, 2000).

The responsibility of treating children with asthma has been shifted from a medical set up to family. In that context, psychosocial problems in the family secondary to having a patient with asthma have been extensively studied. Financial difficulties, subjective distress, large number of medical prescriptions and the

symptoms itself reported to be the major areas of problems (Gustafsson, Olofsson, Andersson, Lindberg & Schollin, 2001).

Stress from the part of parents is shown to have negative effects on children with Asthma. This kind of familial stress operates negatively in the domains of treatment adherence and management of the disease. It can also be explained in terms of certain bio-psychological mechanisms (Wood, Miller & Lehman, 2015).

Cognitive aspects of asthma

Symptom perception is a subjective experience. Hence it is contaminated by a number factor. They are (1) Emotional arousal and distress (2) Learned response tendencies such as adaptation to symptoms through habituation, neglect or repression of symptoms, selective perception in confirmation with the schema generated from illness experience and false interpretation of symptoms (3) Competition between the actual and false cues related to asthmatic sensory information. These factors may lead to bias in perception either in the form of under perception or over perception, both are pathological since that may lead to either fatal asthma or excessive use of medicines (Rietveld & Brosschot, 1999).

Believes and expectations of what causes asthma can actually elicit symptoms. A study attempted to demonstrate the order- asthma relationship and its effect on biological and psychological measures. An order presented as asthmogenic and harmful was perceived as highly disturbing for asthma patients. When the same order was later presented as therapeutic it didn't elicit any annoyance from them. Patients who believed that the order is capable of inducing respiratory difficulties

actually ended up in developing airway inflammation and asthma symptoms (Jaén & Dalten, 2004).

Like many other health related beliefs one's ability to control symptoms known as, asthma self efficacy has a major role in symptom perception and control. Being confident in one's ability to control asthma symptoms is associated with better asthma control and quality of life (Lavoie, Bouchard, Joseph, Campbell, Favreau & Bacon, 2008).

At a cognitive level, inappropriate perception of respiratory symptoms is associated with asthma related disturbances. A working model of symptom perception in asthma has been proposed by Janssens, Verleden, De Peuter, Van Diest and Van den Bergh (2009). According to this model preoccupation and exaggerated attention towards body sensations along with affective and contextual inputs leads to excessive evaluation and lowered inhibitory control over negative emotions. When these interact with the schemas or mental representations of asthma, actual symptoms appears and that enhances ones motivation to act. This will in turn again enhance attention processing and continue as a vicious cycle.

Affective responses do affect symptom perception. Fear of symptoms determines how a person perceives the somatic symptoms and the intensity of unpleasantness attach with them. Persons with high fear of symptoms perceive their respiratory symptoms as extremely unpleasant, where same intense symptoms are were viewed in mild to moderate unpleasant by people who are not preoccupied with the fear of symptoms. Self-efficacy to deal with the threat of respiratory symptoms is a moderator here. High self efficacy provides a sense of control over

the symptoms which in turn predicts the emotional distress attached with the respiratory symptoms (Janssens, Verleden, Peuter, Petersen & Bergh, 2011).

People with poor asthma control also displayed biases in perceiving asthma-specific stimuli. This attention bias to threatening cues makes them vulnerable for developing anxiety disorder, since similar mechanism has been seen in anxiety spectrum disorders also. This is more evident in patients with poor asthma control (Dudency, Sharpe, Sicouri, Lorimer, Dear, Jaffe, Selvadurai & Hunt, 2017).

Concealing one's inner experiences such as emotions and thoughts are the core features of secret keeping. Secret keeping in the form limited opening up of one's inner experiences associated with more poor sleep quality and severe asthma symptoms. Negative affect is the underlying mechanism that links the association, as a result impairs sleep quality and symptom severity (Imami, Stanton, Zilioli, Tobin, Farrel, Luca & Slatcher, 2018).

Socio-demographic studies

The identity people form about themselves in relation to their illness in turn has a role in many of the health related behaviors. There are two types of asthma patients based on the rejection or acceptance of the identity of 'asthma patient' named Deniers and Accepters. These two groups differ significantly with regard to the beliefs they held about the illness, self disclosure and their pattern of medicine use (Adam, pill & Jones, 1997).

A sociological study was conducted by Gabe, Bury & Ramsay (2002) among young people to understand the experience of living with asthma and the commonly

used strategies to manage the symptoms. The most-frequent reported difficulties were wheezing, coughing, additional breathing difficulties, and tightness of the chest. The illness was reported to have restricted the individuals' school and recreational activities, but not so much in the social dimension. Participants were more concerned about the long term use of medication which they are supposed to take over and the resultant dependency on such medicines for the rest of their lives.

Gender difference in treatment adherence, psychiatric symptoms and quality of sleep was studied. Asthmatic women expresses less negative attitude towards their pharmacological treatment and were more punctual on hospital visits and utilization of medicines comparing to men. But in terms of psychiatric morbidities, women had higher rates depression and anxiety and sleep issues (Sundberg, Toren, Franklin, Gislason, Omenaas, Svanes & Janson, 2010).

Psycho-social management of asthma

Training in accurately detecting respiratory sensations can be prescribed for people who have difficulty in perceiving their symptoms. Repressive coping style is known for (difficulty in reporting of affective states and misperception of bodily changes) making the vulnerability for these perceptual difficulties. Training on active coping skills may generate therapeutic benefit for asthma. This indicating the potential advantages of the inclusion of visuo-motor tasks that can enhance the perceptual skills, as "first aid" approach in the management of asthma (Lehrer, 1998).

In a similar line biofeedback technique found to enhance symptom perception and management. Biofeedback-assisted relaxation intervene asthma severity and medication use. At a biological level, it reduced stress and inflammatory responses in the body which can alter asthma symptoms (Kern-buell, Grady, Conran & Nelson, 2000).

The efficacy of a brief educational intervention to enhance knowledge and skills relevant to asthma self-care and motivational interviewing to improve attitudes toward taking medications as prescribed, was studied using twenty-five adults with asthma who were randomly assigned to receive a brief educational intervention alone, or education plus motivational interviewing. Overall results showed that all participants had improvement with regard to thier knowledge about asthma. Interestingly, it was seen that receiving education alone can negatively influence treatment adherence whereas receiving motivational interviewing can positively influence the same (Schmaling, Blume & Afari, 2001).

Efficacy of a brief educational intervention with the aim of improving knowledge and skills relevant to asthma self-care, and the efficacy of motivational interviewing in order to enhance the attitudes toward treatment compliance were assessed in one study. Participants were subjected to a brief educational intervention alone, or education plus motivational interviewing.

At the end of intervention, all participants found to have improvement in their knowledge of asthma and skills for self management. Participants who received education alone have not showed improvement in treatment compliance, whereas participants who received motivational interviewing had enhancement in adhere.

The results indicate the potential benefits of incorporating motivational interviewing among patients with poor treatment adherence (Schmaling, Blume & Afari, 2001).

Psychosocial interventions proved to have a significant positive influence on a wide range of outcome variables in chronic medical conditions such as, biological variables (e.g., some immune measures and imaging measures), progression of the disease (e.g., better survival, slowing down of progression), and cardiac mortality (Schneiderman, Antoni, Saab & Ironson, 2001). These sort of interventions play an important role in the prevention and management of chronic diseases by addressing variables of on lifestyle and psychosocial functioning. This in turn results better disease outcomes and alter disease processes (Schneiderman, 2004)

Systematic assessment of anxiety and depression is an integral part of asthma management, as these variables can influence the quality of life, and which in turn affect the efficacy of interventions. The combination of anxiety and depression severity predicts the quality of life (QOL) in a more intense way than they do individually (Hommel, Chaney, Wagner & McLaughlin, 2002).

Peck, Bray and Kehle (2003), conducted a school-based intervention to determine the efficacy of relaxation and guided imagery techniques in children with asthma on their lung function and measures of anxiety, by adopting a multiple baseline design across four children with asthma. From the analysis of the measures, it was found that their peak expiratory flow rate (a measure of lung function) improved and anxiety decreased in the participants after undergoing the interventions.

Bray, Kehle, Peck, Theodore and Zhou (2004) proposed a theory that explains how reduction of emotionally triggered asthma results from treatments derived from positive psychology. The core element of the theory was that physical health issues, such as asthma, can be intervened through systematic interventions that are proposed to enhance the individual's of sense of control and competence over the symptoms, feelings of independence and social support.

Family therapy as an adjunct to pharmacotherapy found to have promising results. It's been revealed that, there was a significant improvement on the objective measures of asthma severity such as peak expiratory flow rate , gas volume, and daytime wheeze among patients who undergone family therapy. Along with this overall clinical outcomes and number of functional days lost due to asthma were also positively influenced by family interventions (Yorke & Shuldham, 2005).

Grover, Souza, Thennarasu and Kumaraiah (2007) conducted a study to examine the efficacy of cognitive behavioral therapy in adjunct with pharmacotherpy in asthma pateints, using a randomized two group design. One group received self management and the other got CBT each lasted for 6-8 sessions. Comparing the data obtained on pre and post assessments the researchers concluded that there were improvements in both groups. Additionally, the group which received CBT showed better outcomes than the group which was administered by guided self management.

Clarke and Calam (2011) conducted a review analysis to examine the effectiveness of psychosocial interventions proposed to enhance health Related Quality of Life (HRQOL) amongst patients diagnosed with asthma. Among the

eighteen studies identified, four studies showed that interventions were effective for enhancing HRQOL. These studies included multiple strategies like, asthma education, training on problem solving skills and elements of art therapy. However there is a criticism that most of the studies were not having a sound theoretical basis and a number of studies in fact overlooked the significance of the interaction between psychological and social variables.

A review study about the efficacy of breathing exercises in the management of patients with asthma concluded that even though there exist evidences of positive effects of breathing exercises on asthma related outcome variables, no reliable conclusions could be generated regarding the inclusion of the same for asthma management in clinical practice. This inconsistency can be attributed to methodological differences among the studies chosen, and also due to the poor reporting of methodological elements in those studies (Frietas et al., 2013).

Treatment adherence is one of the factors predicting the prognosis of many of the chronic health condition. Inferences from the reviewing the literature on treatment adherence shows that enhancing adherence to prescribed treatment regimen influences a number of clinical outcomes and the disease status itself. However the existing methods for improving adherence in chronic health problems are complex and inconsistent. This implies the need of improved design for long-term interventions as well as more objective measures on adherences (Nieuwlaat et al., 2014).

In the background of hyperventilation as a common problem in asthma patients, a case study was carried out on the training in capnometry-assisted

respiratory training (CART). It is a 4-week breathing training targeted at normalizing levels of end-tidal carbon dioxide using a capnometer. After the training, basal levels carbon dioxide increased from hypocapnic to normocapnic range. There was also a marked level of improvements in lung function which remained to be stable even in the later follow-up (Ritz, Rosenfield, Steele, Millard & Meuret, 2014).

Smith and Jones (2015) identified twelve randomized controlled trials of psychological interventions for asthma, in literature searched up to April 2007. These interventions included cognitive behavioural therapy, biofeedback-assisted relaxation and behavioural therapy. It was concluded that the benefits of these interventions are difficult to be concluded since outcome variables chosen and methods used for evaluating theme were highly different across studies.

'The effects of exercise training in a weight loss lifestyle intervention on asthma control, quality of life and psychosocial symptoms in adult obese asthmatics' was a study conducted by Ferreria et al., in 2015. The study used a prospective and randomized open-label controlled trial with 2 arms and blinded assessments.

Yoga has been found helpful in managing symptoms and enhancing quality of life in patients with asthma (Zy et al., 2016). Yet, the researchers involved in this review study warns that the results must be interpreted with caution because data regarding the adverse effects of yoga is very limited.

Many variants of mindfulness have been used as an intervention for asthma. A study was conducted with an aim of understanding the phenomenological

experience of patients with asthma who have undergone an 8-week mindfulness-based cognitive therapy (MBCT), using in-depth qualitative interviews. They also explored whether the mindfulness approach helped them in dealing with the illness; and their awareness of any meaningful changes in relation to their breathlessness, activity levels, anxiety or low mood. Thematic analysis showed greater acceptance and reduced sense of disease-related stigma; noticing subtle bodily sensations to detect early warning signs of breathlessness; linking pulmonary rehabilitation advice with mindfulness; developing a new relationship to breathing, activity and associated thoughts; having a greater sense of control; being creative around limitations and removing psychological barriers to being more active (Malpass, Kessler & Sharp, 2005).

The question that whether the action behind breathing training is mindfulness been addressed in a study. Finding from a study which was intended at exploring whether the action behind general breathing training involves the mechanism of mindfulness shows that these kind of exercises essentially involves mindfulness, though these are unintentional, and can account for the reported increase in quality of life and subjective symptom improvements (Bailey, Bridgman, Marx & Fitzgerald, 2016).

Applications of mindfulness in clinical population

Researches show that mindfulness can be used in clinical settings as an intervention for a variety of conditions ranging from medical issues to psychological disturbances.

In the case of aggression management, researchers have largely utilized single case designs along with other ones. Singh, Wahler, Adkins and Myers (2002) administered mindfulness training to an adult with mental retardation and mental disorder and found that the individual, who earlier had a disabled community living because of his aggressive behavior, could successfully lead a community life, confirmed through a one-year follow-up programme.

A study which employed a 21-participant- single group pre-post design claims that, more than two third of the total participants were prescribed lower dosages of drugs as a result of undergoing two sessions of mindfulness training for anxiety symptoms (Rungreangkulkij & Wongtakee, 2008).

Wright, Day and Howells performed (2009) a review of the studies conducted to assess the efficacy of mindfulness in reducing problematic anger. They concluded that mindfulness can be used to enhance existing techniques or approaches to deal with problematic anger, such as CBT. This may work in different ways like helping the individual to develop self-regulatory ability, to refrain themselves from self-criticism, etc.

A lot of studies have been conducted to assess the efficacy of mindfulness based interventions on reducing depression. MBCT (Mindfulness Based Cognitive Therapy) have been found efficient in reducing emotional reactivity to social stress which in turn reduces depressive symptoms (Britton, Shahar, Szepsenwol & Jacobs, 2012). Mindfulness based interventions can significantly reduces self reported levels of anxiety and depression in women treated for breast cancer (Wurtzen et al., 2013); can reduce co-morbid depression in drug-dependent males undergoing detoxification

and treatment for their drug dependence (Navidreza & Usha, 2014) and decreases rumination and symptoms of depression (Deyo, Wilson, Ong & Koopman, 2009).

Delgado, Guerra, Perakakis, Vera, Paso and Vila (2010) found that mindfulness can reduce chronic worry through improving the related regulatory mechanisms such as improved emotional meta-cognition and increased vagal reactivity.

Soler et al., (2011) found that mindfulness training may benefit people with borderline personality disorder in such a way that it helps the individuals to better control attention and impulsivity behavior.

Klainin-Yobas, Cho and Creedy (2011) conducted a meta- analysis of 39 experimental and quasi-experimental studies conducted in 10 different countries, on efficacy of mindfulness training in reducing depressive symptoms among people with mental disorders. Based on the effect size obtained they concluded that mindfulness based interventions were found to be superior in reducing depressive symptoms. They found that the length of intervention, than the methodological quality of studies, contributed more to the effect size.

In a comparative study conducted by Garland, Rouleau, Campbell, Samuels and Carlson (2015) among cancer patients revealed that mindfulness was less effective in reducing the dysfunctional sleep beliefs, compared to CBT. On the other hand, Gross et al., (2011) have found that Sleep Onset Latency (SOL) and The Insomnia Severity Index (ISI), could be significantly reduced through mindfulness training, in normal adults. Both these studies employed the design of randomized

control trials. These results indicate that mindfulness intervention may work differently with normal and patient populations.

One important review carried out by Fix and Fix in 2012, concluded that many of the group studies conducted on the topic of mindfulness intervention's efficacy in reducing aggression, were methodologically weak. At the same time, these researchers found that single-case studies were the most efficient in determining the efficacy of such interventions.

Two independent studies were conducted in the USA, one among the racial and ethnic minority women (Witkiewitz, Greenfield & Bowen, 2013) and another among young female marijuana users (De-Dios, Herman, Britton, Hagerty, Anderson & Stein, 2011). Though both the studies had limitations related to small sample size, the results yielded preliminary evidence that mindfulness intervention can help individuals reduce substance related dependency.

Khoury, Lecomte, Gaudiano and Paquin (2013) found in their meta-analysis that mindfulness is moderately effective when used with schizophrenic or psychotic individuals. Higher positive impact of mindfulness was found on negative symptoms than on positive symptoms

Detached Mindfulness (DM- a specific version of mindfulness) has been found to be effective in reducing rechecking behavior in individuals with Obsessive Compulsive Disorder (OCD). Further it proved to be more efficient in dealing with memory distrust, compared to cognitive restructuring procedures (Ludvik & Boschen, 2015).

McClintock, Anderson and Cranston (2015) used a randomized control trials design to assess the efficacy of mindfulness therapy in reducing maladaptive interpersonal dependency. The results revealed that participants who were assigned to mindfulness therapy group had improvements in dependency related behaviors.

Application of mindfulness in non-clinical population

Studies conducted among healthy individuals have also provided evidences that mindfulness can enhance mental health via various mechanisms such as reducing stress, improving the ability of emotion regulation, promoting positive reappraisal coping etc.

Dobkin (2008) conducted a study to comprehend the underlying processes that bring about changes in individuals while and after undergoing MBSR. He used three questionnaires to obtain data regarding this and found that the results agree with what Shapiro, one of the pioneers in the field of clinical intervention of mindfulness, that individuals are able to 're-perceive' things and events happening inside and outside themselves, as a result of mindfulness.

In a series of studies conducted to examine whether subjective well being can be enhanced through mindfulness training, researchers measured the variable called 'financial desire discrepancy' before and after mindfulness training. Different studies involving undergraduates, working adults and mindfulness trainees were conducted separately, which revealed that mindfulness can reduce the level of financial desire discrepancy and thereby promote subjective well being (Brown, Kasser, Ryan, Linley & Orzech, 2009).

Garland, Gaylord and Park (2009) proposed a hypothetical causal model that explains the role of mindfulness in stress coping, especially, the positive reappraisal mode of coping. The study argues that mindfulness allows an individual to control the cognitive functions related to stress coping and thereby enhance positive reappraisal coping. Since this study was conducted a decade ago, the results may not seem to be very surprising today, yet points to the applicability of mindfulness based interventions in a bio-psycho-social perspective.

Van den Hurk, Janssen, Giommi, Barendregt and Gielen (2010) conducted a study to investigate whether mindfulness practice is related to alterations in bottom-up processing. The study, which made use of the phenomenon of intersensory facilitation (IF) to assess bottom-up processing, bought evidence that mindfulness meditation can result in improved allocation of attentional resources.

Keng, Smoski and Robins (2011) carried out a review of correlational, cross-sectional, intervention and laboratory experimental researches conducted on the effect of mindfulness on psychological health. This lead them to conclude that mindfulness is capable of contributing to psychological health of an individual by way of increased behavioural regulation, improved subjective wellbeing and reduced emotional reactivity.

Research on how mindfulness influence emotion regulation has yielded results of different nature. A review of such kind of studies, conducted by Chiesa, Serretti and Jakobsen (2012) concluded that mindfulness could be best described as ‘top-down’ emotion regulation strategy in the case of short-term practitioners whereas it’s a bottom-up emotion regulation strategy in the case of long-term

practitioners. This result indicates that, as person exercise mindfulness for a longer period, it goes on to become more a detail- based/driven process.

A similar meta-analytic investigation, conducted two years later, brought results in favour of mindfulness based interventions that it positively influences emotional reactivity, psychological flexibility, rumination, worry and related factors (Gu, Srauss, Bond and Cavanagh, 2014).

There is also evidence that 'trait mindfulness', assessed quantitatively by means of standardized tests, have relationships with cognitive styles in such a way that it reduce an individual's vulnerability to emotional disorders.

Application of mindfulness for general medical conditions

Apart from psychiatric conditions mindfulness found to be effective for addressing various psychological factors associated with medical conditions and also for intervening the physiological aspects of the condition itself.

Ljótsson, Hedman, Lindfors, Hursti, Lindefors, Andersson and Rück (2010) used randomized control trial design to assess the efficacy of an internet-delivered exposure and mindfulness therapy treatment for individuals with Irritable Bowel Syndrome. They used a primary measure of symptom severity and a secondary measure of quality of life to assess the effectiveness of the intervention. Both the measures indicated that the treatment group had improvements compared to the control group. A long term follow-up study revealed the results were long-standing and further that improvements were more pronounced in individuals who completed the full treatment.

Brotto et al., (2012) tested the efficacy of a brief mindfulness based cognitive behavioural intervention in improving sexual functioning of women treated for gyneacologic cancer, using experimental research. They concluded that the intervention was successful at achieving this goal.

Mechanism of change in mindfulness based interventions

Efforts have also been made to understand the underlying neurological and neuro-physiological mechanisms related to mindfulness.

A review of researches conducted to examine the suitability of cortisol level assessment as a marker of improvement in people who undergo MBSR, researchers found that cortisol, which is secreted by the adrenal gland in response to stress, can serve this purpose. But they also reported that cortisol level assessment can be used best in connection with the measurement of other mechanism and hormones associated with stress such as catecholamines, cytokines etc., rather than being used in isolation (Matousek, Dobkin & Pruessner, 2009).

Berkovich-Ohana, Glicksohn and Abraham Goldstein (2012) found that mindfulness meditation can influence the attentional and self-referential networks in the brain, as reflected by lower frontal Gamma activity in practitioners compared to others.

A study conducted among remitted but recurrently depressed females revealed that mindfulness can cause a shift in the mid-frontal asymmetry, which was more pronounced during the meditation period. This shift can stimulate an approach-

related motivation in individuals (Keune, Bostanov, Hautzinger & Kotchoubey, 2013).

In an attempt to differentiate between neural activity changes resulting from mindfulness and spiritual practices separately. Barnby, Bailey, Chambers and Fitzgerald (2015) carried out a review of nueroimaging researches conducted in these two areas. They found that mindfulness practice and spiritual practice are associated with different patterns of parietal and prefrontal activation.

In conclusion mindfulness is applied in a variety of conditions including psychiatric and medical and also as strategy for enhancing general psychological functioning. It was proved as effective on the basis of objective and subjective measures of various outcome variables.

NEED AND SIGNIFICANCE OF THE STUDY

The present study marks its relevance in terms of originality of the topic as well as the method by which the research problem is dealt with.

The researcher herself is a practicing clinical psychologist, the experience from which she eventually arrived at the present area of research. A lot of patients were brought in with somatic complaints combined with psychological disturbances. At times, cross-referrals from other departments in the hospital also were psychological issues due to some primary medical condition.

Some patients came with typical 'somatoform' disorders where psychological disturbances manifested themselves through/using the body, as in the case of 'conversion' disorders. In all these instances, it was noteworthy that an intervention

in the body could bring about tremendous changes in the psychological position of an individual, and vice versa. Though this was not at all a fresh idea as far as the researcher was concerned, watching herself that truly mutually-complementing pattern of mind-body relationship occurred so original to her.

Compared to many other medical conditions, Asthma is a disease which is understood better in terms its psychological instrumentality. Most clinicians, including pulmonologists, acknowledge that the disease is often caused, triggered, and/or maintained by psychological factors.

A large body of research exists in this area and an even larger amount of interest is on the go. Most of the studies conducted on Asthma are aimed at addressing the psychological variables related to the disease, within the conventional framework of clinical psychology. Generally, these topics ranges from application of psychological principles in asthma treatment adherence, asthma co-morbid to other psychological disorders such as depression and phobias, reduction of anxiety related to Asthma, relaxation techniques most effective for Asthma and so on. There is hardly any study trying to integrate the entire experience related to the disorder. Similarly, an Asthma management programme which covers every known psychological domain too is difficult to come across.

The present study is an attempt to compensate for this gap in this area of research. It is a systematic exploration of psychological correlates with an aim of developing a comprehensive (than limiting to one or two domains) Asthma management program.

More importantly, researches in this area are by and large quantitative in nature. Most of them use tools such as rating scales to assess the level of anxiety experienced, or checklists to tap the frequency and nature of disease-related specific behaviours (such as carrying safety measures or avoiding public functions, etc.) or standardized psychological instruments to understand relationship between the disease and the psycho-social make-up of an individual. The problem with these kind of quantitative techniques when used to study a complex disease like asthma is that the subjective experience of the individual is overlooked to certain extent that the 'researcher-presumed' variables (reflected as in the selection of a specific inventory, or the inclusion or exclusion of a specific item in a checklist/rating scale) substitute themselves largely, but inadequately, with the individual's own phenomenological experience

The present study therefore uses purely qualitative measures to attain its specified objectives. Only such a design, which analyses the subjects' own narratives and explanations regarding their experience with the disease, would enable the researcher to understand the cognitive, behavioural, emotional and other related psychosocial factors involved in Asthma, the information regarding which is inevitable for the purpose of present research.

The efficacy of mindfulness/ mindfulness based intervention has been testified by a number of studies carried out in different countries. It's found to be effective in dealing with different psychological processes and phenomena such as emotion regulation, cognitive style, psychological well-being, quality of life, etc., both in normal and patient populations.

Besides, evidences exists in its favor that many biologically based processes of phenomena, like pain in cancer patients, migraine headache, etc., can also be effectively managed using mindfulness. This is what made the researcher to think of a mindfulness based management programme for Asthma

Asthma patients as a group on the other hand, being suffering from a chronic condition, does a lot of 'harm' to their own lives, which are not necessarily determined by the 'organic' essence of the disease. Rather, these harms which include being preoccupied with the disease, restricting one's social and professional lives, etc, are brought in by psychological factors

So it is necessary to address these factors in such a way that individuals suffering from Asthma would be able to better manage these issues. This capacity is achieved through a deeper understanding of the condition and its acceptance thereof. At this point, a clear differentiation must be made between two kinds of interventions related to chronic conditions. One is addressing the symptoms of the condition/disease itself and the other one is addressing the psychological factors related to the symptoms, without directly intervening on any of the symptoms. The present research would be a contribution along the later mentioned perspective because addressing a symptom directly is more effectively done by the medical paradigm than by a psychological intervention.

There are many criticisms raised against the practice of mindfulness with most of them targeting the issue of ‘lost soul’ of the approach, which is often attributed to its Western developers including Kabat- Zinn. As the philosophy was originated in the east and then taken away to the west, its essence, which was deeply

immersed in the practice of Buddhism, gave way to the commercial vigour of the economically developed and urban- based European panorama. As a result, the 'let it go' and the 'let it be' techniques which are essential to the practice of mindfulness therapy usually works well with an urban population, on which the therapy has been standardized, where resources are there in plenty; while in developing economies like India, especially the rural India, these techniques may be less effective and may go over the heads. These criticisms still holding strong, clinical evidences continue to flow in, in favour of mindfulness as an effective therapeutic approach. Therefore, the present study considers mindfulness to be an essential part of the to-be-developed intervention program. At this point, it is to be made clear that, for the present study, mindfulness is conceptualized as a clinical intervention, and other conceptualizations of mindfulness as a broad philosophy of life or as a dispositional trait are irrelevant in this context.

RESEARCH AIM/ STATEMENT OF THE PROBLEM

The aim of the study is to explore the psychological correlates affecting the experience and expression of symptoms in patients' diagnosed asthma and to design a comprehensive asthma management program, and to implement the proposed intervention on patients diagnosed with asthma for the fine tuning of the intervention.

The current study is titled as "EXPLORATION OF PSYCHOLOGICAL CORRELATES OF ASTHMA AND DEVELOPMENT OF A MINDFULNESS BASED ASTHMA MANAGEMENT PROGRAMME"

WORKING DEFINITIONS

Asthma: Asthma is a common condition characterized by reversible airflow obstruction, airway inflammation, and increased bronchial responsiveness to a variety of stimuli, ranging from allergens and other irritants to strong emotions (National Heart Lung & Blood Institute, 1997).

Mindfulness: Mindfulness is a practice of paying attention in a particular way: on purpose, in the present moment and non-judgmentally, as defined by Kabat-Zinn (2001).

Asthma Management Programme: An intervention programme designed to address the cognitive, emotional, behavioural and familial factors related to asthma with an aim of enabling the individual to better manage the condition.

Exploration: Exploration refers to the attempt to discover the psychological correlates of asthma by means of analyzing the semi-structured interviews conducted with Asthma patients

Psychological correlates: Psychological correlates are defined in the context of the present study as those psychological variables that co-exist with other contributory factors, which cause the condition of asthma to increase in its severity, to remain longer in its symptomatic expression, or to trigger the onset of an episode.

RESERCH OBJECTIVES

1. To explore the psychological correlates of asthma

2. To develop a mindfulness based asthma management programme

3. To run a clinical trial of the proposed mindfulness based asthma management programme for fine tuning of the intervention.

RESEARCH QUESTION

Based on the aim and objectives of the current study the "key research question" has been formulated. From the key research question, sub questions were also formulated which would be addressed during the course of the research.

Table 1.1: *Key research question*

How can the psychological correlates of asthma be addressed through developing an intervention based on mindfulness?

The sub questions proposed are;

- What are the psychological correlates of asthma?
- How can a mindfulness based management programme to address these correlates be developed?
- How can it be validated and fine tuned?

CHAPTER SUMMARY

This chapter provides an orientation to the topic of the research in terms of the nature of asthma, its symptoms, phenotypes, psychological issues in asthma, co-morbid psychiatric conditions, psychological approaches as explanatory models of asthma and psycho-social management of asthma. It also introduces the concept of

mindfulness, its historical evolution, psychological principles under pinning mindfulness and finally the neuro-biologycal basis and clinical applications. The final section provides an extensive review of the literature on various dimensions of asthma and mindfulness.

CHAPTER II

METHOD

The purpose of the research is to enhance knowledge to enable us to understand how the world works. Both quantitative and qualitative methods of research serve and contribute to this very purpose of knowledge, even though the nature of 'knowledge' produced or enhanced through these two methods varies qualitatively. We live in a world which is very complex and which is multiply constructed in social, personal and relational terms. We think about, talk about and convey our ideas of this 'constructed' world through various means such as language, rituals, conversations, stories, memories, products and so on. The different methods of qualitative research and its application attempts to study these various means of 'constructed' world. For instance, the method of grounded theory and phenomenology strives to understand how people use meaning to colour their ideas of world view. On the other hand, the method of ethnography looks for significance of rituals, customs and relational reciprocities in a culture. Discourse analysis and narrative analysis are the methods, where the use of language is analysed for their role in the construction of a multi-layered and interconnected socio-political world.

Why do qualitative research?

There is a major reason why it is important to carry out qualitative research. This would justify the basic question that is raised from both within and outside the frame work of qualitative research that why we need to study any phenomenon about which we already knew something and, sometimes, even many things. For any question regarding an event or experience that a qualitative research would undertake, majority of people would be able to offer some kind of common sense explanation or understanding of why and how that event or experience has

happened. Still we go for a scientific analysis through qualitative research because common sense knowledge in the modern world is far from being coherent and consistent. The way people understand and talk about things change. The notion of a 'good life' continuously changes. Societal axioms and norms change. So the very term 'common sense' may go senseless from time to time. This is the first and foremost reason why there is necessity of qualitative research.

Current study adopts a multi-method qualitative research design, as it incorporates a number of different qualitative methods to address the objectives spread across different phases of the research. Method of the study can be elaborated under two broad phases, a pilot phase and a main study. Each phase differs in terms of objectives, designs and measures used and the way it has been carried out. Each phase contributed to the planning and procedure for the next phases. The details of each phase such as characteristics of participants, designs, measures used, procedures and analytic strategies used are discussed in the corresponding phases.

PILOT PHASE

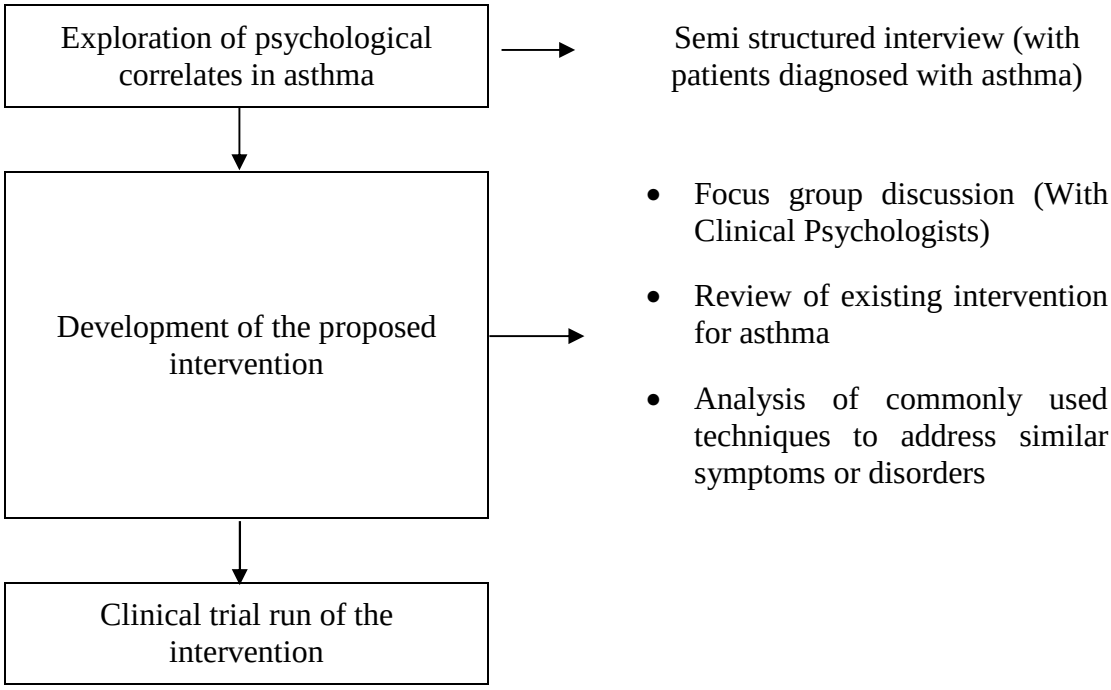
A pilot phase was conducted before the main phases of the study. The purpose of the pilot phase was to make all the necessary preparations for the various phases of main study. Pilot phase started with identifying the psychological variables commonly discussed in the context of asthma. An extensive analysis of previous studies was carried out. An unstructured interview was conducted with Pulmonologists for understanding their perspectives on role of psychological factors in Asthma. Details of the hospitals having service of pulmonologists in Kozhikode and Malappuram were collected. The authorities of these hospitals were then

contacted and consent for expert interview was obtained. On the basis of analysis of previous studies and expert interview a schedule for the semi structured interview was prepared, which was later used in the main phase of the study, to explore the psychological correlates of asthma via interviews with asthma patients.

MAIN PHASE

The main phase was conducted in a sequential manner. It was further divided into three phases, as Phase 1: Exploratory phase, Phase 2: Intervention development phase, and Phase 3: Clinical trial run phase.

Figure 2.1: Overall design of the main phase with different phases



PILOT PHASE

1. Analysis of previous studies

The pilot phase of this study was conducted with the aim of getting familiar with the psychological factors relevant in asthma. For this purpose, researcher conducted an extensive review of studies conducted in this area. Related reviews of psychological correlates of asthma were collected from both books and published journals and articles. Studies focussing on physiological aspects and psychological issues secondary to other medical co-morbidities were exempted. Most of the studies collected were conducted after 2000, however a few studies which were found to be relevant for the current research, conducted before 2000 were also included. Primary importance was given to factors contributing to asthma maintenance as well as psychological factors originating from asthma experiences. This gave the researcher a preliminary understanding about the major psychosocial correlates of asthma.

2. Meeting Experts

Purpose of this phase was to obtain the perspectives of medical practitioners who treat asthma regarding how various psychological factors is manifested in asthma and how can they be addressed. This phase includes the interviews with pulmonologists and general medicine practitioners in the health sector. This is considered as a second source of data, next to literature review conducted earlier, for getting information regarding the potential content and structure of the intervention to be designed.

a. Participants

4 pulmonologists having more than 5 years of experience were included for the study. All the four participants were practicing at various private hospitals in Kozhikode and Malappuram districts. Sampling technique used was purposive.

b. Instruments

Unstructured interview

Unstructured interview was used to collect information regarding the topic of study. Person to person interview method was used. The participants were requested to express their experiences and observations regarding the influence of psychological factors in asthma. Major areas included in the interview were:

- Psychological factors, if any, in asthma
- Manifestation of psychological factors in clinical presentations
- How do health professionals manage psychological aspects
- How pharmacological treatments are being affected by these psychological factors
- Psychiatric co-morbidities which are usually ruled out in patients with asthma
- Opinion about psychosocial management

c. Procedure

An initial list of hospitals having the department of pulmonary medicine was prepared. Name and contact details of the pulmonologists were collected. The researcher either met the participants directly in their clinics or interviewed them over phone as per their convenience. The purpose of the study and objective of the current phase was explained to them. After obtaining consent (Appendix I) for a one-to-one interview, the time and date of interview were fixed on the basis of mutual convenience of the participant and the researcher. All the interviews were held in their consulting rooms. All the interviews were done on a one-to-one basis and in a single session. Before conducting the interview, signature on the informed consent sheet was obtained. Each interview had 30-45 minutes duration. Researcher encouraged the experts to express their ideas as free as possible and to include examples from their professional experience.

d. Data analysis and preparation of semi-structured interview schedule

The collected data from experts were analysed using content analysis. This analysis helped the researcher to identify the psychological correlates relevant in asthma, and how these factors affect the prognosis and treatment regimen.

Based on these two sources of data, obtained through literature review and expert interview, a semi-structured interview schedule has been prepared (AppendixV). The major areas included were their understanding about of the disease, role of stress and emotion, behaviour they perform in association with asthma, attitude to treatment, role of family, self description, etc. Researcher chose

to conduct a semi-structured interview since it was important to get free expression of their thoughts, emotions and experiences. The overall areas to be covered and the width of data to be obtained were pre planned and the themes were kept in a sequential order based on logic and sensitiveness. Though the semi-structured interview mostly utilized open ended and general questions, a few specific questions were also incorporated. These specific questions were in fact used as prompts when the client was unable to provide enough details. All the items were framed as neutral rather than value laden. Jargons were carefully avoided to make questions easily comprehending to the participants based on their culture, language and education. Each participant was encouraged to speak and provide maximum details.

MAIN PHASE

The purpose of the main phase was to explore the psychological correlates in asthma and to design an intervention to address these identified correlates and to conduct a clinical trial run of the proposed intervention for the fine tuning of it.

MAIN PHASE 1- EXPLORATION OF PSYCHOLOGICAL CORRELATES IN ASTHMA

First phase of the main phase was carried out to explore and identify the psychological correlates in asthma in order to attain the first objective of the study. It included the actual administration of the interview schedule and analysis of the obtained data. The relevance of this main phase 1 was that the researcher wanted to contextualize the intervention to be designed. Although the analysis of reviews on psychological factors brings out a number of variables relevant in asthma, it was

important to check whether those factors were actually present in the participants for whom the intervention is to be implemented later. It is also relevant to explore how these factors are manifested in the participants included in the study. The researcher was in contact with the pulmonologists who participated in the expert interview earlier, during the pilot phase. With their help researcher could expand the list of hospitals having pulmonary medicine department and she, by and then, contacted authorities of these hospitals for getting permission for recruiting patients for participating in the interview.

Meanwhile, under the guidance of one Pulmonologist, an asthma camp was conducted at a private hospital in Malappuram district. The researcher presented the purpose of the study, and got permission from the hospital administrator and relevant authorities to conduct interview with the patients visiting the camp. A letter showing the purpose of research from the institution was produced for permission. Though the camp was meant for asthma cases, people with other respiratory issues and co-morbid conditions also attended. In that context, the pulmonologists first evaluated each patient and then referred those who met the inclusion criteria to the researcher. Asthma diagnosis was done on the basis of GINA (Global Initiative for Asthma) guidelines, 2018. GINA is a medical guideline organization directed by health care professionals to reduce the morbidity, mortality and prevalence of asthma. All variants of asthma have been included for interview. Camp was conducted for a single day. So, only a few patients could be interviewed on the day of camp. Other patients were introduced to the researcher by the Pulmonologist and contact details were collected. After explaining the research purpose they were

asked to participate in the interview, only if they were willing. Those who expressed their readiness were later called, fixed an appointment and were interviewed. During the interview confidentiality was assured that the information they share would only be used for research purpose and personal details would not be presented anywhere.

a. Participants

The population of the study consisted of the patients diagnosed with asthma. 36 persons including 8 males and 28 females, with the primary diagnosis of asthma who met the inclusion criteria for the study were selected for the interview. The sampling procedure adopted here is convenient sampling. It is a non probability sampling technique. It makes use of people who best suit the criteria of the research as well as those who are available and willing to participate in the study.

Inclusion criteria

Either males or females:

- who have primary diagnosis of partly-controlled and uncontrolled asthma
- who don't have any other major medical or psychiatric co-morbidities (though subclinical level of anxiety or depression was not ruled out)
- who are adults- age ranging from 18 to 65
- who have reading and writing ability
- who are with minimum 2 year duration of illness
- who are not undergoing any kind of psychological intervention

Exclusion criteria

- People with Chronic obstructive pulmonary disease (COPD)
- People with life threatening asthma- ICU admission in the last 24 months
- People who are smokers for the last 1 year or greater

b. Data collection technique

Semi-structured interview

It is a method most frequently used in social science researches, in which interviewer asks more of open ended questions, allowing the interviewee to express their responses in a discussion manner rather than a linear question-answer format. The rationale for using semi-structured interview was that, researcher wanted a detailed and vivid data from the participants which would reflect a clear picture about the client's experience with asthma.

Procedure

All the recruited participants were met and the semi-structured interview was conducted after getting the informed consent signed (Appendix II). Background details of each participant were collected before beginning the interview. Researcher made sure that the participants get enough time to open up and express their ideas freely. To build rapport, interview was started with small talks on some general matters. The following instructions were given: "I am a researcher from Psychology department, Calicut University. As part of my research I would like to know some information related to your experiences with asthma. All your responses will be

confidentially kept and only be used for my research purpose. Your personal details such as name or address will not be published anywhere. You are free to decide whether to participate or not, and it won't be affecting the treatment you are receiving in any manner. If you are willing, I will be asking a few questions related to your experiences with the illness. You are also free to share related experiences which I have not asked you about. Thank you".

Researcher was just a facilitator in such a way that the participants were free to express their experiences in detail but at the same time directed them to the topic of discussion whenever they deviated largely. Researcher encouraged the participants to give examples related to various experiences in order to get details and a clearer picture about the phenomenology. Researcher validated their responses with rephrasing of what they said. Though the interview schedule was used, it was not followed in a strict manner. Major themes of the interview were very clear and specific as far as the researcher was concerned. So, the schedule was kept as a guide only. Before winding up, the interview schedule was checked to make sure that all major areas have been covered. Each interview lasted for 30-45 minutes and all interviews were digitally recorded with participants' permission.

c. Analysis of the data

Thematic analysis

Recorded data were transcribed in to verbatim. Thematic analysis (TA) has been used to derive major themes. It is a widely used and recognized method in psychology and the social and health sciences. It is considered to be a method for

analysing the concepts underpinning the production of scientific knowledge (Holton, 1973). Thematic analysis varies to a great extent based on the nature and depth of analysis such as inductive thematic analysis, deductive thematic analysis, semantic thematic analysis, latent thematic analysis, descriptive thematic analysis, and interpretive thematic analysis. Latent thematic analysis method is used here, which focuses on meanings that lie under the surface of data. So the analysis brings out assumptions, frameworks or world views that underpin semantic meanings. In latent TA participants are not explicitly aware of the essential meaning of their expressions, but the researcher's interpretive work brings it out.

Researcher went through the six phases of analysis as recommended by Braun and Clarke (2006), beginning with familiarization of data- reading and re-reading transcripts and making notes of any initial analytic observations. After familiarization coding has been done, which is the first step of identifying a common pattern in the data. Relevant factors in connection with the research question (psychosocial correlates of asthma) were identified and labelled. 'Searching for theme' was the next phase, wherein the researcher clustered together the identified codes to generate a more obvious pattern in the data. It's not a simple 'discovery' but the recognition of the association and commonalities between the codes that constitute broader themes. After identifying the initial themes, researcher reviewed the themes to make sure that the candidate themes show a good fit with the coded data and the entire data set. Reviewing also meant for evaluating whether the identified themes have a central organizing concept. As a result certain themes were discarded and necessary modifications were made. In the next phase, key themes

were defined and named. Selecting an appropriate theme name and defining them provided conceptual clarity. The final phase was 'writing the report' in which the researcher associates together the analytic extracts of the data to make it a more comprehensive and integrated piece of knowledge. Analytic conclusions were generated from the pattern of themes. Major themes identified were later used for preparing intervention module.

e) Establishing validity

To minimise the subjectivity in analysis and selection of codes, inter-rater coding was adopted. The transcribed data was given to 3 academicians (Assistant professors in Psychology) and were asked to code them independently and then these codes were compared for mutual agreements.

MAIN PHASE 2-DEVELOPMENT OF THE INTERVENTION

The purpose of this phase was to meet the second objective of the study- to develop a mindfulness based asthma management programme that can address the psychological factors related to asthma. Literature analysis as a methodology was used here along with an FGD. During this phase, using the inputs from three different sources such as 1) analysis of the common techniques used to address similar symptoms or disorders, 2) literature review on existing interventions and management programs for asthma and the related theoretical foundations, and 3) data from the focus group discussions with clinical psychologists, the proposed intervention programme was developed through the method of data triangulation. Triangulation is a method of developing validity of qualitative research, in which

different sources of data on a common topic of interest have been corroborated. “It enriches the understanding of a phenomenon by viewing it from different perspectives, rather than converging on a single, consistent account of the phenomenon” (Flick, 1992). Subsequently it was examined by experts in the field - 5 clinical psychologists having at least 4 years of clinical experience and expertise in using different therapeutic frameworks. Evaluators were personally met and the details of the study and designed intervention were provided. After providing such an orientation regarding the study, a copy of the proposed intervention was provided and they were asked to evaluate it based on the intervention designing criteria. Experts had to verify whether the designed intervention meets the criteria and they were also encouraged to provide suggestions. The details of this phase are discussed in the following sections.

The following sources of data have been triangulated to ensure the validity of the intervention programme.

Review analysis as a methodology

The literature review can be considered as a method because the researches conducts a vast survey of the existing literature pertinent to a topic of interest and identifies the procedures and strategies used to understand and address the issue at hand. Conducting a literature review is equivalent to conducting a research study, with the information that the literature reviewer collects representing the data (Onwuegbuzie, Leech & Collins, 2011). Corresponding to this line of view, an extensive review of related literature was carried out by the investigator with an objective of obtaining data regarding two different themes. One, common techniques

used to address symptoms or disorders similar to those identified during main phase 1 of the research were enlisted. Two, existing interventions used for asthma management and the related theoretical foundations were identified and enlisted.

a) **Analysis of common techniques used to address similar symptoms and disorders**

Themes emerged from the semi structured interview with patients of asthma represents the major areas to be intervened. These areas were conceptualization of illness, specific cognitive factors, maladaptive behaviours which worsen or maintain asthma, emotional factors, familial factors, attitude to treatment and asthma related self efficacy. Each of these themes encompasses a number of subthemes. Addressing these themes is considered as the skeleton for designing the intervention. Psychotherapeutic techniques, which are theoretically as well as empirically proven as useful for addressing these identified themes as part of different psychopathologies like anxiety spectrum disorders and somatoform disorders, were selected by the researcher and were kept as the potential content for the proposed intervention.

b) **Analysis of existing interventions and theoretical basis of asthma management**

Before designing intervention, an extensive reviewing of literature has been conducted on existing psychosocial interventions and asthma management programs. The mostly used frameworks are educational, behavioural and cognitive behavioural. Among the three behavioural interventions are most extensively used

and frequently integrated techniques are, stimulus control, relaxation, breathing exercises, education programs, biofeedback and cognitive restructuring. Each techniques were examined in terms of mechanism of change, what they address, conditions in which it has been applied, indications and contraindications for uses, mostly applied areas, empirical data related to the applicability of techniques. On the basis of this, the techniques most suitable for addressing the factors to be included were carefully selected. Researcher's rationale for selecting them for asthma management was matched with the rationale of the technique itself.

In the similar line, existing theories as explanatory models of asthma symptoms were examined to get familiar with the process behind it. Major theoretical frameworks explaining the relevant processes contributing to the maintenance as well as exacerbation of asthma symptoms are read in detail. They are,

- Classical Conditioning
- Operant Conditioning
- Experiential Avoidance
- Escape Learning
- Various Cognitive Distortions

However the primary data for designing interventions was the insights driven from the exploratory study. The main themes emerged from the data were conceptualization of illness, cognitive factors, behavioural factors, emotional factors, familial factors, attitude to treatment, asthma related self efficacy and self

concept. Each theme represents the broader areas to be intervened. How each of these factors have been addressed when they are represented as part of various psychopathologies were analysed. Empirical works and psychotherapy frame works suggesting how these factors been addressed were kept as the source for selecting techniques. 'Mindfulness' has been chosen as the therapeutic frame work for designing the intervention.

a) **Focus group discussion (FGD)**

The purpose of the FGD was to explore the perspectives of the clinical psychologists in terms of felt needs, feasibility, potential content and structure of the intervention designed to be for asthma management. It is a research method allowing people from similar background or experience to discuss a specific topic of interest, guided by a moderator. It helps the researcher to get insights about how a group perceive an issue, the extend and range of opinion and ideas, the inconsistencies and variations in concepts, experience and practice. Group contexts facilitate personal disclosure (Frith, 2000). It is a well used method in qualitative research as it provides opportunities for enhancing the dimensions and point of views about a topic through exploring and eliciting the subjective experiences and attitude of stakeholders. It enrich the understanding about a phenomenon as it includes detailed experiences of a number of stakeholders and not just limiting to the researcher's observations and opinions. Considering these advantages, the present study adopted FGD for clinical psychologists. The rationale for selecting clinical psychologists was that they would be able to express felt needs of an intervention as

well as opinions on its feasibility on the basis of both their clinical experience and theoretical backgrounds. This makes their opinions more authentic and valid.

a) Participants

Participants of the FGD consist of 8 clinical psychologists who had a minimum of 4 years of clinical experience in dealing with wide variety of psychopathologies. Participants were selected through convenient sampling. Before selecting them as participants of the study, a brief enquiry was done to make sure that none of them is specialized in dealing with single or limited psychiatric conditions. Practitioners, who work exclusively with special population like child pathologies, or addiction or family therapy, were excluded. During enquiry it was made sure that they had experience in dealing with clinical cases having somatoform disorders as well as psychopathologies having general medical conditions. The rationale was that asthma has a biological basis, so that in FGD that element should be considered as a background while discussing about the feasibility and potential contents of the intervention.

b) Measures

Focus group probes (Appendix VII) have been prepared which facilitated discussion to keep a track without deviating much from the topic of discussion. Major areas on which discussion conducted are;

- Need and relevance of psychological intervention in asthma
- The best frame work of intervention they would have used

- Potential contents of the proposed intervention (in connection with the themes)
- Rationale for suggested techniques (theoretical or experiential)
- Structure and strategies of the intervention
- Proposed mechanisms of change behind suggested techniques
- DOs and DONTs
- Suggestions about number of sessions and other things they would like to add.

c) Procedure

For the purpose of selecting participants for the FGD, the investigator collected contact details of clinical psychologists practising in Kozhikode and Malappuram districts. All the participants were contacted over phone and introduced the researcher. A brief description about the study and FGD phase was given and enquired their willingness to participate. The inclusion and exclusion basis were enquired during this time. Total of 15 clinical psychologists were contacted initially, in which 2 were not willing to participants due to time constraint. Another 3 were excluded as they were not having enough experience in handling clinical cases with a biological basis. Later another 2 participants informed their inconvenience to participate as they were out of station. The final FGD composition included 8 participants.

Once the participants were selected, they were asked to come up with a potential date for conducting the FGD. Based on their suggestions a convenient date, time and venue have been fixed.

On the day of FGD, the participants were given an informed consent form (Appendix IV), seeking consent for audio-recording of the whole discussion. The discussion was based on the focus group schedule, and the researcher acted as a moderator for the group. The major role of the researcher was to giving questions, keeping the discussion going, and encouraging the participants to talk freely. To get a 'group as a whole' feeling, researcher facilitated discussion and interaction between participants, rather than asking a series of questions in turn. To make it more interactive and natural, agreements, disagreements, arguments, suggestions, personalized experiences, theoretical explanations, etc., were allowed. FGD lasted for around 45-50 minutes. The entire discussion has been audio recorded with participant's permission.

d) Analysis of focus group discussion

Content analysis was used to get the essence of the focussed group discussion. Both quantitative and qualitative measures have been used. Frequency of responses, in terms of most preferred techniques to address the key factors relevant in asthma was taken in to consideration for designing intervention. Participants who disagreed up on or less frequently opted techniques or psychological principles were also carefully noted down. The qualitative side of content analysis was used to understand the explanation participants have given for various questions, mechanism of action of various psychotherapeutic techniques they have suggested.

While integrating all the three sources of data, a gap was felt about a more comprehensive intervention which can address more widened areas such as cognition, behaviour, emotion, familial factors and perception of illness. Hence the mindfulness frame was used. Though the entire intervention programme is based on the ideas of mindfulness, techniques from cognitive-behavioral and systemic perspectives also adapted to address factors found in the exploratory phase. Number of sessions were decided to be 10, however slight variations were allowed in case if the need arises such as, demanding more time in addressing certain issues or if there is a need to omit addressing certain expected factors as it would be irrelevant in some clients. The rationale for 10 session is that, first of all the expected time to address the relevant factors is around 10 hours and usual mindfulness integrated programs such as mindfulness based stress reduction is taking around 8 sessions for completion (Kabat-Zinn, 1990). Each session would be lasted for an hour. Sessions were planned to be conducted in the department of psychology, Calicut University.

Researcher's own clinical experience as a cohesive link

Researcher had 6 years of experience in managing and intervening with different psychopathologies. As part of the 2 year training in Mphil in clinical psychology, researcher got training in dealing with and intervening a wide variety of psychopathologies ranging from the spectrum of neurotic to psychotic to addiction diseases as well as general medical conditions. As part of the academic side of the training program, researcher had to formulate cases with in different theoretical models such as psychoanalytic, behavioristic, cognitive-behavioristic, humanistic, biopsychosocial, etc. These factors helped the researcher to design the intervention

programme by corroborating both theory and therapeutic techniques. This foundation shaped the designing of intervention in the following ways.

- Asthma shares a number of features in common with panic disorder and other anxiety spectrum disorders, suggesting the possibility of using similar intervention techniques in asthma.

- Avoidance, safety behaviours and dependence found to negatively reinforce anxiety in a number of anxiety spectrum disorders. Exposures (for habituation and extinction) and cognitive re-structuring were effective for dealing them.

- Hyper-vigilance and preoccupation with one's body- the chief characteristic of somatoform disorder was common among patients with asthma. From the clinical practice, mindfulness found to be effective in reducing these.

- Mindfulness integrated behaviour therapy was effective in the management of clinical cases in which dealing with one's own thought was difficult for the patients (e.g. obsessions in obsessive compulsive disorder, rumination in depression, etc.)

- Despite of the difference in the nature of illness, educating patients about their condition always brought realistic goals and responsibility from their side, suggesting the possibility of using psycho-education in the beginning of intervention program.

- Home works in most of the patients facilitated and speed up change. It also enhanced the connection between sessions.

- Even when patients appeared to be self sufficient of attending and utilizing therapeutic elements, meeting their family enhanced a more comprehensive management of the case, indicating the advantages of incorporating at least one session with family.

- Experience in dealing with different severity levels helped to estimate an average number of sessions required for addressing the target issues.

- While dealing with the cases referred from general medical practitioners (Eg.co-morbid psychiatric conditions, preparation for a surgery, health anxiety, etc) an eclectic approach was more useful rather than sticking on a single theoretical model, because of their bio-psycho-social roots. This facilitated the researcher to use techniques from different therapeutic model, though the global frame work was mindfulness.

b) Establishing Validity

After triangulating the inferences from semi structured interview, analysis of relevant theories and existing interventions and focus group discussion a preliminary asthma management programme was designed with in the frame work of mindfulness. This developed programme then given for 5 clinical psychologists for expert validation. Expert validation was done to ensure the validity of the designed intervention program. Subject experts were clinical psychologists having more than 4 years of clinical experience in handling wide variety of cases and expertise in

using mindfulness, behaviour therapy and cognitive behaviour therapy. A validating form (Appendix IX) incorporating the intervention reporting criteria was prepared by the investigator after discussing with the research supervisor. It was developed based on CReDECI 2, Criteria for Reporting the Development and Evaluation of Complex Interventions in healthcare: revised guideline (Möhler, Bartoszek, Köpke & Meyer, 2012) and TIDieR, Template for Intervention Description and Replication (Hoffmann et al., 2014) The items in the validating form represent various quality dimensions about the development and piloting of the newly designed intervention, such as adequacy of the name of the intervention, description of the theoretical basis, description of the components and its rationale, logical order of the components, mode of delivery, number of sessions and schedule. Experts were required to give their response both quantitatively and qualitatively. On one hand they rated each dimension on a 0-5 rating scale. On the other hand, they were asked to give their suggestions and comments about each dimension.

The researcher contacted the evaluators for getting their permission to serve as evaluators. After getting their consent, the proposed module was sent to them individually over mail, along with detailed instructions and a validation form. Their suggestions on various dimensions of evaluations such as, addition, deletion, reframing, structuring, etc., were taken into consideration and prepared the refined final asthma management program. The refined module of the intervention was arranged in such a way that it begins with,

- The number of session
- Targets to be addressed

- Techniques used
- Its rationale
- Components
- Expected outcomes

PHASE 3- CLINICAL TRIAL RUN OF THE INTERVENTION

The phase 3 of the main phase was to meet the 3rd objective of the study, which was to conduct a clinical trial run to determine the feasibility, acceptability and practicability of the intervention and also to fine tune it further. Clinical trials refers to experiments or observations carried out, with the objective of answering specific questions related to the efficacy and/or feasibility of any bio-medical or behavioural interventions. Well planned clinical trials enhance validity of the results and also help the researcher to make clinical judgements and facilitate practice (Thorat, Banarjee, Gaikwad, Jadhav & Thovat, 2010). Methodological, procedural and clinical uncertainties were clarified and a fine tuning of the intervention was targeted through this. Before implementing the intervention a detailed case analysis of the participants were done.

Case analysis

Case analysis is a qualitative research method to obtain in-depth analysis of a person or phenomenon. As an idiographic method it allow researcher to explore in depth about a topic of interest. This provides understanding about the interaction and influence of various psychological processes within person. Case analysis makes use of interpretive phenomenological analysis, text interpretations, grounded theory etc.,

for analyzing the elicited data (Hayes, 2000). From the clinical point of view case analysis allows not only an exploration of a phenomenon, but also provides information for diagnosis and treatment. Current research used case study method because of following reasons:

- Before delivering an intervention a clear understanding about the participant was required in terms of psycho social history, personality, significant events in childhood, history of asthma, how the disease affected the participant, experiences related to asthma, etc.
- Having an in-depth knowledge about the person would facilitate customization of the designed asthma management programme (based on the assumption that, as individual difference would be considered before implementing any intervention program).
- Researcher wanted to know how the person related variables would be interacting with the intervention.
- Researcher was aimed at getting an experiential account of the person than just asthma related indexes.

a) Participants

Initially 4 cases having diagnosis of asthma were selected, but only 3 of them were found meeting the criteria in a strict manner (not secondary to other medical issues). Inclusion and exclusion criterion is kept same as that of the pilot phase. All the three cases were analyzed in details to make sure about the possibility of

participation. Among the three one participant dropped out after the first session and the final sample composition consists of 2 adults diagnosed with asthma but not on regular pharmacological intervention. Both the participants were female adults, who were diagnosed with asthma. All the participants matched with the inclusion and exclusion criteria of the study. Phenotypes were not matched, so that both allergic and non-allergic asthma cases were included as participants. Convenient sampling was used to as it allows the researcher to include people who are willing and available to participate.

b) Measures used

As part of case analysis, the following measures were incorporated.

Socio-demographic sheet: It includes the basic identification details such as name, age, sex, education, marital status, occupation, and so on (Appendix VI).

Psycho-social history: This is a detailed history about the disease as well as about the person herself. It encompasses details about the onset, duration and impact of asthma on the participant. Psycho social aspects refers to the life history of the person such as information relevant at her childhood, adolescents, adulthood, family dynamics, personality, past history of medical or psychiatric illness, bio-socio-occupational functioning .

Mental Status Examination: It describes the mental state and behaviour of a person. A clinician assesses various domains such as mood, perception, cognitive functions that has been seen in the client. It includes both objective observation

made by a clinician or investigator and subjective details provided by the client (Appendix VII).

Visual analogue scale (VAS): It is a measurement instrument that helps to measure a characteristic or attitude that is expected to range across a continuum of values and can't be measured directly, and it is one of the extensively used measures of intensity of symptoms in clinical research (Wewers & Lowe, 1990) (Appendix XII). VAS is specifically used in researches conducted in the area of asthma, where the correlation between the subjective perception of asthma symptoms (using VAS) and objective measures on peak expiratory flow could be established (Gupta, Aggarwal, Subalaxmi & Jindal, 2000). In the current study VAS was used at two points- one at the beginning of the first session and another at the end of the final (10^{th}) session. Participants were asked to rate their perceived attainment of various dimensions of the target areas such as knowledge about asthma, reduction in avoidance behaviours, management of asthma related thoughts, awareness of body sensation, management of emotions, skills of problem solving in daily life, interaction with family, sense of control over asthma and mindfulness skills, on a 0-10 visual scale, where 0 indicates least level of attainment of the target dimensions and 10 indicates highest level of attainment. A visual analogue scale differs from a normal numeric scale in such a way that the scale used in the former takes a visual form (like a printed geometric scale) whereas in the later the participants are asked to assign a number to rate a specific attribute.

Self report: One month after subjected to the intervention, participants were asked to write a self report on the therapeutic experience and feed back (Appendix X). It

included their subjective experiences of mindfulness, perceived outcomes, process of change and difficulties they had. Along with this participants were asked to write an asthma diary too (Appendix XI). It encompasses the number of days they experienced asthma related symptoms, it's severity in terms of whether it was mild, or moderate or severe, and impact on daily life functioning.

Procedure

Phase 3 of the main phase was the clinical trial run of the designed intervention. The purpose of this was to assess the feasibility and practicability of the intervention while actually implementing it on people. Informed consent was given the client to sign (Appendix III), which ensures the client about the confidential nature of participation and nature of research. Client read the consent form carefully and signed it to record her willingness to participate. Before beginning the proper intervention, a session was provided to orient the client about the intervention. Nature of intervention, what client is expected to do, what therapist would be doing, how long sessions would last were explained and client was encouraged to clarify her doubts if any. A detailed psycho social history and history of the illness was taken, which provided information for the baseline, along with that participants were asked to complete the rating on VAS.

1st session was targeted at socializing the intervention programme and providing a basic understanding about the concept of mind-body relationship. Psycho-education was done to enhance client's awareness about the psychological factors contributing to asthma. In that context mind-body relationship was introduced. In order to facilitate to processing of mindfulness, body scan meditation

was done and audio recording of the script was given the client for practicing at home. An asthma diary was introduced, in which client was asked to write her experiences of asthma on a daily basis. Participants were expected to write the nature of asthma symptoms, how many days they had asthma related difficulties, severity of symptoms, how it affected on that day and related difficulties and experiences.

2nd and 3rd sessions were started with evaluation of asthma diary and mindfulness related experiences. These sessions aimed at addressing asthma specific maladaptive behaviours such as experiential avoidance, safety behaviours, hyperventilation and medicine dependence. Discussion on facets of mindfulness was carried out. Attention, awareness and attitudes were explained in terms of possible benefits in addressing significant factors in asthma. Present moment awareness (Being in the moment) was emphasized as a major objective for getting the essence of mindfulness. Gradual exposure to avoided stimulus was started and also prescribed to practice as homework for maximizing generalization.

4th and 5th sessions addressed cognitive aspects relevant in asthma symptom perception such as - anticipation to symptoms and various cognitive errors. Discussion on “Thoughts are not facts” and “automatic pilot” has been done to enhance their perception of thoughts as something normal as every bodily process. Impermanence of thoughts along with its coming and going nature was highlighted. Preoccupation as well as attempts of avoidance of thoughts is framed as unhealthy as it would have a rebound effect. Self report was collected and evaluated.

6th and 7th sessions were focussed at dealing with emotions as it found to precipitate and maintain asthma symptoms. Since the entire frame work of intervention is mindfulness based, emotions have been conceptualized as a mental event, which evokes and subsides on its own. Observing the waves of emotion with a non judgemental and non reactive attitude along with a sense of acceptance was encouraged. Controlling and active regulation of emotion was here substituted by active awareness and acceptance, which in turn would facilitate a normal calming down and early picking up of emotional cues. Importance of willingness to experience anxiety and negative emotions as positive emotions was highlighted. Review of sitting meditation and exposure tasks was also carried out as in previous sessions.

8th session was designed to improve the client's problem solving and coping skills. Different ways of dealing with daily life problems were discussed and client was asked to come up with solutions to hypothetical problems and the way she can be coped with it.

9th session was planned for dealing with familial factors that would have a role in the maintenance and worsening of symptoms. This session was conducted with family members for reducing secondary gain if any as well as, over protection and blame. Significant family members were educated about the relevance providing enough exposures and reducing over involvement to eliminate the 'sick role' of the client.

The 10th session was targeted at summarizing the entire intervention program, and also for maximizing the generalization of gains from the intervention.

Treatment adherence (both medical as well as psychotherapeutic) was emphasized and mindfully dealing with relapse was discussed. Beyond the formal practice of mindfulness, application of mindfulness as a philosophy in daily life was encouraged. Clients were thanked for their participation and their experiences and requested to fill the visual analogue scale. One month after the termination of the MBAMP program, participants were asked to write a self report about overall experience of the intervention, including perceived outcomes, process of change and difficulties they had.

d. Analysis of self report

Content analysis

The method of 'Content Analysis' was used to analyse self reports. It is a research tool used for studying texts, documents, images or videos of various forms (Hsieh & Shannon, 2005). Researcher used this method in order to derive meaning out of the heterogeneous data obtained from the participants. Along with this, their asthma diary was also subjected to a primary analysis to understand the pattern of symptoms during the course of intervention.

Along with this a personal reflection of the investigator was provided about the delivery of intervention, such as the process evaluation, internal and external facilitators and barriers influenced and deviation of fidelity, etc.

Ethical considerations

- Prior to the inclusion of the study all participants explained a general outline of the study.

- Informed consent was obtained before participation in the study.
- Confidentiality of the individual specific data on various measures was maintained.
- The audio recording of the one to one interview and FGD were carried out after obtaining their consent.
- The participants were provided with contact details of the researcher and supervisor in case if they require any clarification or additional information about the research.
- The current medical treatment participants were receiving was not interfered.
- Participants were informed that they are free to withdraw from the study at any point.
- Participants of interview were informed that there would be no direct or indirect benefits for participation in the study.
- Participants of the intervention phase were provided a realistic picture about the possible benefits of participation; however it was made clear that the intervention is not a substitute of medical treatment they are receiving.
- Referral related guidelines were provided to the participants who seek any form of psychological intervention for issues a primary diagnosis of any psychopathologies.

CHAPTER SUMMARY

This chapter is about the how the study had been carried out through different sequential phases using specific methods, measures, procedures and analyses. Current study was conducted as 2 broad phases, a pilot phase and a main phase. Pilot phase includes all the preparatory works done prior to the main study, such as analysis of reviews and meeting experts for getting a preliminary understanding about the psychological correlates of asthma. On this basis a semi structured interview schedule was prepared. The main phase consists of 3 sequential sub phases, designed as main phase 1, main phase 2 and main phase 3. In the main phase 1 a semi-structured interview was conducted with patients diagnosed with asthma for exploring the psychological correlates in the selected sample. The responses from the interview were then transcribed and the data was undergone for a thematic analysis. The themes generated by this were considered as the key areas to be included for designing the intervention. Based on this, techniques empirically and theoretically proven as effective in addressing these identified themes were carefully selected by the researcher. This was considered one of the sources of data for triangulation carried out in the main phase 2. The main phase 2 was done to design the intervention, for which data from multiple sources were triangulated to ensure the validity of the proposed intervention. As part of this a FGD was conducted with clinical psychologists, for the purpose of exploring possible contents and structure of the proposed intervention. Content analysis was used as analytical strategy. As a third source of data extensive review of existing interventions and techniques for asthma was done and the theoretical basis was also carefully considered. On this

basis an initial draft of intervention was prepared and given for expert validation. In the main phase 3 the proposed intervention was implemented on 2 cases as a clinical trial run for checking the feasibility, practicability and fine tuning of the intervention.

CHAPTER III

ANALYSIS AND DISCUSSION

This chapter deals with the inferences obtained from the study, discussed in the light of existing empirical and theoretical evidences. Since the present study was conducted in 2 *serial* phases, each of which used different tools for data collection and analysis, results obtained from each of these stages would be discussed in a similar manner, starting with the results from the *pilot* phase, through the main phase phases of *exploration of psychological correlates in asthma,* and *development of the intervention,* and concluding with the phase of *clinical trial run of the proposed intervention.* Inferences obtained from the pilot phase of the research are only briefly described and instead they are heavily made ingredients for the quickly followed *main phase* phase.

While discussing the findings and inferences, care has been given to include, as much as possible, the 'verbatim responses' given by the participants and clients of the study in order that the data communicates comparably to each and every reader.

PILOT PHASE

The pilot phase of the study was aimed at collecting preliminary data on psychological variables affecting asthma. Review of literature on this area has been done in terms of collecting and understanding the empirical studies conducted in the area of asthma. As a secondary source of data expert interview was carried out. Combining these two sources provided a preliminary understanding for the researcher about the psycho social correlates of asthma, and this was taken as a background data for preparing schedule for semi structured interview. Reviews of empirical studies shows that following psychological correlates are the most extensively studied in asthma

- Health related quality of life (Gandhi, Kenzik, Thompson, Dewalt, Revicki, Shenkman & Huang, 2013)
- Stress and asthma symptoms (Lehrer, Isenberg & Hochron, 1993)
- Believes and asthma symptoms (Jaén & Dalten, 2004)
- Subjective symptom perception (Janssens, Verleden, De Peuter, Van Diest & Van den Bergh, 2009)
- Emotion and asthma (Lehrer, Isenberg & Hochron, 1993)
- Treatment adherence in asthma (Halimi, Godard, Pithon, Varrin & chane , 2010)
- Familial factors (Williams et al., 2000)
- Psychological risk factors for asthma (Booster, Oland & Bender, 2017)
- Psychiatric co-morbidities in asthma (Barton, Clarke, Sulaiman & Abramson, 2016)
- Psycho-social interventions in asthma (Schneiderman, 2004)

Interviews with pulmonologists provided an experiential data which portray how psychological variables manifest in clinical presentations and interfere with the management. The significant responses which have been considered as a background data for the preparation of semi-structured interview schedule are:

- Though the origin is primarily biological it's maintenance and prognosis is affected by psychological factors
- Some patients do not improve despite of following a strict treatment regimen
- Treatment compliance depends highly on the individual's personality and emotionality
- Cases were presented with asthma symptoms, without any biological basis
- Panic cases are sometimes reported as asthma cases
- Stress exacerbates some symptoms
- A large number of asthma patients are anxious
- Patients are generally reluctant to consult mental health professionals even if referred
- Depression and panic disorders are seen in some uncontrolled asthma cases
- Psychiatric referrals are required for asthma cases
- Pulmonary rehabilitation programs are widely accepted now a days
- Integrated asthma management team involves psychologists

These two sources of data were utilized and a semi-structured interview schedule was prepared and presented in Appendix 1.

MAIN PHASE 1- EXPLORTION OF PSYCHOLOGICAL CORRELATES OF ASTHMA

Phase 1 of the main phase was aimed at exploring the psychological correlates of asthma through administering a semi-structured interview. Analysis of the transcripts obtained from the semi-structured interviews were conducted using thematic analysis, which is considered useful to use in a health care set up for exploring attitudes, views, etc., about a medical condition. Data were arranged under relevant key topics after a preliminary analysis. Based on the commonalities of coded data, broad themes containing similar concepts were found out.

Table 3.1: *Themes emerged from the analysis*

Themes
• Conceptualization of disease
• Cognitive factors
• Behavioral factors
• Emotional factors
• Familial factors
• Attitude towards treatment
• Asthma related self efficacy
• Self concept

The main themes emerging from the data were conceptualization of disease, cognitive factors, behavioural factors, emotional factors, familial factors, attitude towards treatment, asthma related self efficacy and self concept. Details of each of the themes are given below and selected verbatim responses are reported along with the discussion and illustration of each theme. Information on sex and identification number of the participants is also given.

Conceptualization of the disease

Table 3.2: *Codes that describe 'conceptualization of the disease'*

- Do not know much about the disease
- Why am I having this disease?
- Not sure about the condition
- Not clear what it is
- Asthma is breathlessness
- It is due to infection
- Something related to chest
- A kind of lung dysfunction
- Not asthma because it's not persistent
- It is hereditary
- May not be asthma
- It's not a serious illness
- Asthma means allergy
- It is basically sneezing
- Doctor didn't explain about it

Conceptualization here refers to how people with Asthma understand about their medical conditions and attributions they make about it. From the present study it is clear that majority of the participants do not have a clear understanding of the disease. They have misconception about Asthma, as they perceive it as 'disease of breathing' or 'disease of coughing':

M02*:" I do not know much about the disease…It is breathing difficulty .Not sure about why it happens. My doctor said it is asthma, so it must be that."*

Unawareness of the heterogeneity of asthma symptoms has been reported which is more common in people with such phenotypes of asthma where breathing difficulty is not prominent (E.g.; cough variant or occupational asthma). Here the individuals have difficulty in accepting their problems as 'asthma':

F02:"*I do not have wheezing…It is basically coughing…so I thought it is part of cold or some other infection...How can we call it as asthma*?"

Lack of awareness about variation in timing and intensity of symptoms also contributes to uncertainty:

M07:"*If it is asthma, I should have had these difficulties all the time, as in many other medical conditions...but the symptoms come and disappear...it is not there all the time.*"

Attribution of illness varies from functional impairment of heart to lungs to nervous system.

Cognitive factors

Table 3.3: *Codes that describe 'cognitive factors'*

- Afraid of death
- It is the end
- First thought is about death
- Do not know when it would happen again
- Unpredictable
- Gets worse as expected
- Can occur anytime
- Can foresee asthma 'attacks'
- I am a chronic patient
- Asthma is a part of me
- It will be always there
- Won't get cured
- Can predict asthma occurrence
- Asthma doesn't leave me
- Better to die
- Always conscious about breathlessness
- Check for symptoms
- Preoccupied with the disease

Cognitive factors represent thoughts, beliefs and perceptions people form on the basis of their experience with asthma**.** 'Fear of death' was the most prominent cognition associated with asthma:

F21:"*I use to think that I am going to die when I feel shortness of breath...because we usually read in newspaper that people died from suffocation.*"

F13:"*The first thought that comes to my mind is that it is the end… and I am going to die from suffocation.*"

Uncertainty and unpredictability about the disease is another prominent factor noted down. Here, it refers to uncertainty regarding 'what the illness is', heterogeneity of symptoms, intermittent nature of symptoms, etc.

F05:"The main difficulty is that we do not have any idea regarding how and when the disease begins...If I knew, I would do something in advance to prevent it...But it is like... out of the blue."

Cognitive errors such as labelling ("Am I a chronic patient"?) and catastrophization ("I think it is going to become a full blown breathlessness") leads to exaggerated symptom perception. One of the participant's responses substantiates this:

F07*:"I use to easily pick my early signs such as coughing or shortness of breath...there, I feel very sure that it's going to get worse shortly…as I observe more and more, it would gradually increase...this make me very anxious and ultimately it would end up in breathlessness and other difficulties*."

Anticipation of symptoms was another subtheme emerged under cognitive factors.

M03:"*Sometimes I feel that I would be having difficulties that day...and I do not know how but ultimately it will end up in asthma difficulties, as expected.*"

Behavioral factors

Table 3.4: *Codes that describe 'behavioral factors'*

- Can't do any household works
- Not doing physical exercises
- Not doing tiring activities
- Family does everything for me
- Depend others
- Always need someone around
- Fear of laughing
- I am asthmatic like my father
- Avoid funny discussions
- Avoid family functions
- Reduced talking
- Talking might trigger asthma
- Can't think of leaving inhalers
- Always carry inhalers
- Inhale and exhale strongly
- Take deep breath
- Breathing strongly might help
- I do not do anything
- Nothing can be done

This theme is about what people actually do in response to their symptoms as well as other behaviours or actions performed in relation with asthma. The most notable behavior associated with asthma is avoidance. Most frequently reported avoidance is of physical activities, house hold work, laughing and social interactions:

F06:"*Now a days I stopped doing house hold works...if I do some tiring work it would become difficult to breathe…So my daughter take up the entire house hold works I used to do.*"

Social interactions were seen only in cough variant asthma, since coughing in public is something that is easily noticeable to others and might result in embarrassment:

F21:"*You know…I am anxious about even laughing…because if I laugh for sometime it gradually leads to coughing and shortness of breath…and its really embarrassing…Sometimes I keep distance from my colleagues when they crack a joke, because I know that if I start laughing it would be difficult to stop*"

Safety behaviours are unnecessary behaviours people carry out to prevent anticipated outcomes. Such behaviours were commonly reported by many of the participants, with the explanation that it reduces their tension associated with the disturbances:

F17:"*I always tell my husband to sleep very close to me, so that if anything happens at the night he would get to know immediately.*"

Safety behaviour associated with inhaler use was also seen, as one of the participant reported "*without inhaler I can't go outside...where ever I go I carry my inhaler, because if something happens I need an immediate option."*

In a similar line in the current study participants have reported that they tend to hyperventilate with the expectation that 'deep breathing' might help to resolve the

suffocation. Persons with family history of asthma found to have a sick role model as one participant reported:

M23:" *"I have seen my father struggling with wheezing throughout his life...now I am also having similar difficulties...and I do not think that it is going to get better.*"

Emotional factors

Table 3.5: *Codes that describe 'emotional factors'*

- Tension has a role
- Tension makes it bad
- Asthma begins after getting emotional
- Sometimes it is after a fight with my husband
- Lose control
- Feeling helpless
- Nothing can help me out
- Not able to relax
- Get angry
- Feeling like to cry
- Feeling irritated
- Shout at others
- Getting emotional
- Always feel anxious
- When anxious , it worsened
- Jealous at others
- Complex feelings
- Try to be indifferent with others
- Scared of having another episode
- Feel dull
- Feel sad about my physique
- A kind of blank feeling

Emotional factors represent the feeling or affective component experienced and expressed by people with asthma in response to asthma. 90% of the participants report that stress has a role in exacerbation and experience of asthma symptoms. The

most frequently reported stress was in the area of family, such as conflicts between children, marital issues and adjustment problems with in-laws.

F13*:"Whenever I am stressed out, I think my problems increase...I feel suffocated when my children are away from home or if they are not available over phone ...when I feel tensed asthma related difficulties take a lot of time to settle down*."

Anxiety and low mood are the dominant emotions emerged from the data set. These emotions were frequently associated with the cognitive factors of uncertainty of next episode. Hopelessness and helplessness were also reported:

F01: "*I do not think that it's going to get better...feel sad about having this illness…the worst part is that nothing is helping me out to escape from this..I have been undergoing treatment for quite a long time, but nothing has changed."*

Anger was another notable emotion participants experience during asthma attack, which is often associated with the frustration of not being able to communicate the difficulties with others:

F12: "*I get angry when someone talks to me while am having asthma…people around me wants to know what I feel or what I need right then. But actually it is very difficult to speak out at that time*."

Familial factors

Table 3.6: *Codes that describe 'Familial factors'*

- Parents support a lot
- Provides good care
- Family doesn't make me do anything
- Children are worried about me
- Am I a trouble to children?
- I feel I am a burden for them
- They spent a lot for me
- I create financial difficulties
- Son has all the responsibility
- I can't help my family
- Family think I am responsible
- My husband might be fed up
- Family do not share problems
- Not disclosing negative events

The theme 'familial factors' is about a wide range of dynamics or pattern of interaction between a patient with asthma and his or her significant family members. Though majority of the participants found to have a good family support, a few of them had blame from the family members for having an illness.

F24: "*My son gets irritated when I wheeze...he has some financial problems, so it is difficult for him to take me every time to a hospital...if I have symptoms, he thinks it is because of my carelessness and he forces me to take rest all the time...my daughter in law feels that I can reduce asthma attacks by taking rest and not involving in any activity, which is quiet difficult for me*".

Perceived burden is another notable factor, as commented by some of the participants "*I am equally concerned about my family…my son is taking care of me...he is having a lot of difficulties because of me*".

Contrary to this, elements of over protection and contingencies maintaining the behavior were also observed in some participants:

F12:"*My family has huge concern about my illness…they always take care not to disturb me...so I never have to get involved in any of the house hold tasks...my husband doesn't share stressful matters with me because he knew that it might increase my problems.*"

Attitude towards treatment

Table 3.7: *Codes that describe 'attitude towards treatment'*

- Fed up with medicines
- Not continuing medicines
- Fear of side effects
- Strong medicines
- Always carry Inhaler
- Can't leave inhalers
- Fear of forgetting inhalers
- Medicines may not be needed
- Confusion about treatment
- Tried multiple treatments
- Self treatment
- Home remedy is better
- Delay treatment
- Medicines are costly
- Financially difficult
- Change doctors
- Change medicines
- Stop on my own

It is a multidimensional construct encompassing cognitive, behavioural and emotional elements one has about the treatment he or she is receiving. Dependence on inhaler was one of the most prominent factors identified under this theme. This is

often associated with the 'unpredictability" of asthma occurrence and leads to an over use of it:

F15: "*I can live without food...but can't even imagine a day without my inhaler...it is not that I use it every day, but I am scared to leave it at home....sometimes I use it up to 8 times per day, which is more than what is recommended*"

Poor adherence to treatment was emerged which is closely linked with the fear of side effects of medicines. In the similar line trying out alternative treatment options was also seen:

M17: "*I do not take medicines much...I use them only on troublesome days…you know…medicines always have side effects, so I think it is better avoid them as much as possible…I tried many things..Homeopathy…Ayurveda.etc...We do not know which one would be helpful."*

Financial burden was reported as a barrier for treatment in some of the participants, which was seen only in uncontrolled asthma:

F03: "*I have been spending lot of money for a long time...I have this disease since my childhood*."

Asthma related self efficacy

Table 3.8: *Codes that describe 'Asthma related self efficacy'*

- No control over it
- Helpless
- Nothing works
- We can't do much about it
- What can we do?
- Sometimes home remedies work
- Only medicines can do
- Its unpredictable
- Immediately see doctor
- Only doctor can help
- Can't prevent
- Can't stop it

This theme is about the beliefs patients with asthma has about how well and effectively one is able to perform certain behaviours related to their disease. 'Lack of control over the illness' was emerged from the analysis. This indicates their self efficacy specific to asthma.

M11: "*Nothing I could do to cure it…actually nobody knows when and why the disease occurs, so nothing can be done as a precaution…and when it occurs I go to hospital immediately, before it gets worse*"

F22: " *what to do...I feel helpless, because when you have these difficulties, nothing would work…you can't stop it anyway."*

Self concept

Table 3.9: *Codes that describe 'self concept'*

• Sensitive to emotions
• Difficult to control emotions
• Less assertive
• Social
• active
• Helpful
• Less sociable
• Less expressive
• Inhibited

Self concept refers to the collection of beliefs one holds about self. When they have been asked about how they would describe about themselves the most common themes emerged are 'sensitivity to emotions' and 'poor frustration tolerance. Ninety five percentage of the participants described themselves as emotional, sensitive in nature:

F08: "*I do not know how to describe...ahhh…I think I am a sensitive person mean, I get upset easily...I also get provocated easily...it is not that I express it then and there, but I find it difficult to control my emotions".*

Several participants reported of being 'less expressive':

F05:"*Yea…I am not a very social person...I talk to others, help them if required...but actually I do not express myself easily…I prefer to keep things within myself, unshared, even if it is worry , tension whatever*".

The way one conceptualizes or understands ones illness has a major role in the subjective experience of the problem and also it is management. Though a few

of the participants understand that stress has a role in asthma, majority of the participants follow a medical model and unaware of the under playing of psychological factors in it. Lack of awareness about the heterogeneity of symptoms also contributes to the confusion in perceiving the difficulties as part of asthma. Secondary to this 'breathlessness' is considered to be the only and most necessary condition for calling it as asthma. Study by Adam, Pill and Jones (1997) shares similar findings by classifying asthma patients as 'deniers' and 'acceptors' on the basis of how they perceive their illness. These groups differ significantly on their self management, strategies of self disclosure, accepting label and pattern of medication use. This suggests the relevance of having a proper understanding on ones condition for the better management of asthma symptoms.

Fear of death was the most prominent cognition appeared in asthma patients. They associate 'breathlessness' with 'death'. So that whenever there is perception of shortness of breath, fear of death comes to mind. This can be explained by classical conditioning in which a neutral stimulus that didn’t have an effect on asthma symptoms in the beginning can become a trigger if it is paired repeatedly with an allergen that is known to cause bronchoconstriction. So that these new stimuli are become capable of eliciting asthma symptoms. The classically conditioned association between 'cough' and perception of asthma has been demonstrated through an experiment, in which they exposed adolescents with asthma to placebo, citric acid at levels not induced cough, or citric acid at 50% of cough inducing levels. One group of them was informed that it is to study asthma reactions and the other group was told that it is about evaluating flavours. The first group found to

have more frequent coughing than second group. Though expectancy can be a factor here, classical conditioning is the best explanation as 'cough' has a conditioned association with asthma (Reitveld, Van Beest & Everaera, 2000). From the current study it's been found out that expectancy plays a crucial role in asthma experience, as many of the participants reported when they anticipate, it usually end up in actual symptoms. Believes and expectations about triggers such as orders and their ability to induce asthma attacks actually increases airway inflammation (Jaen & Dalten, 2004). Uncertainty and unpredictability of symptoms and the timing of next asthma attack creates large amount of stress among persons with asthma.

Catastrophization, a major cognitive error reported by the participants show the link between asthma and panic disorder, which can be best explained by catastrophic misinterpretation theory. According to which catastrophizing of normal or mild body arousal such as slight rise in heartbeat or palpitation or shortness of breath, ultimately leads to anxiety responses in the body. These anxiety responses in fact creates further increases arousal and end up in more prominent bodily responses. This could be misinterpreted as symptoms of breathlessness and continuous like a vicious cycle. Asthma and panic disorder shares several features in terms of symptoms overlap and high co morbidity (Deshmukh, Toelle, Usherwood, O'Grady & Jenkins , 2007).

Similar to cognitive factors, behaviors can maintain and exacerbate asthma symptoms. Safety behaviors and excessive avoidance of all possible cues related to asthma seems to be negatively reinforcing the problem. The most common avoidance behaviors found out were avoidance of physical activities, house hold

works, laughing, social interactions and sexual activity. These entire stem from the fear that increased arousal might leads to breathing difficulty and instigate next asthma attacks. Since they avoid these activities for quite some time, it is difficult for them to try out it again.

Avoidance of stress and negative emotions was also found out as an anxiety maintain factor. According to Mowrer's two factor theory of anxiety (1960), avoidance is a kind of negative reinforcement as it helps to alleviate the disturbance temporary and due to which these behaviors tends to get stronger, which in turn maintain asthma. Studies have shown that hyper ventilation increases the anxiety symptoms associated with asthma. If classical conditioning acts as a mechanism which facilitate the process of making certain stimulus triggers for asthma symptoms operant conditioning works as a maintenance mechanism. Another notable behavior associated with asthma is hyper ventilation but this paradoxically worsens the difficulties, by inducing high autonomic responses in the body.

Stress found to modulate asthma symptoms, as many of the participants reported psychological stress seems to exacerbate as well as maintain asthma related difficulties. Early experience of stress has an effect on gluco-corticoid resistance, which acts as a vulnerability for both depression and anxiety (Van Lieshout & Macqueen, 2008). Though there was no diagnostic level mood or anxiety spectrum disorder appeared to be present in the participants, subclinical level of depression (low mood, fatigability, sleep disturbances, etc) and anxiety could be traced. The longitudinal relationship between illness perception, asthma control and emotional

problems supports these findings (Tiggelman, van de Ven, van Schayck, Kleinjan & Engels, 2014).

Asthma is something which affects not only the individual, but also the family dynamics. Familial factors perceived burden, blame and over protectiveness were emerged as subthemes in the present study. Blame for having the illness, and not taking necessary steps to prevent next episode are the common themes of conflict between participants and family members. Both perceived burden and blame were connected with financial difficulties. Relationship satisfaction among family members were influenced by asthma related illness factors (Schmaling, Afari, Barnhart & Buchwald, 1997). Contrary to this, over protectiveness to the extent of not allowing doing anything independently, was also emerged. This pattern of dynamics also maladaptive as this would leads to contingencies maintaining the behaviors and lack of exposures to even activities one can easily manage.

The medical model, majority of the participants, following shapes their attitude towards treatment and self management skills. Dependence on inhalers seems to be the most prominent factor to be intervened. This dependence stems from the fear that symptom onset is unpredictable, and one should be prepared all the time to deal with it. The expectation from treatment is a complete cure than a temporary relief, so that 'doctor shopping' and shifting to alternative treatment methods found to be common among the participants. Poor treatment adherence is largely attributed to the fear of side effects of medicines. Individuals with poor adherence to treatment found to have more frequent exacerbations, sever nocturnal symptoms and high rate of hospitalization (Halimi, Pry, Pithon, Godard, Varrin & Chanez, 2010). Apart

from medical treatment awareness regarding the management of psychological factors is absent in majority of the participants.

‘Lack of control over the illnesses was emerged from the analysis. One contributory element to this is the adoption of a complete medical model. As a result the attribution is that medicine is the only thing that can give some relief. Lack of steps for prevention was also evident. The decreased attempts are again secondary to the belief that the symptoms occurrence is unpredictable, so that it is not known how to take strategies to prevent it. Perceived control over the symptoms and treatment considered to be an important element related to self efficacy. Perceived lack of control impairs quality of life and other health related outcomes in asthma (Mancuso, Sayles & John, 2010). Improvements in subjective reports of asthma symptoms without any changes in objective pulmonary functions after psychotherapies indicate the relevance of perceived control (Olajos-Clow, Costello & Lougheed, 2005).

In the current study the common personality factors associated with asthma are sensitivity to emotions, poor frustration tolerance, and inhibition and being less expressive. Majority of the participants describe themselves as emotional, easily experiencing negative emotions such as anger and sadness. Inhibition in social interaction and expression of emotions also found out, which is consistent with the findings that ‘alexithymia’ is a prominent personality factor seen in asthma (Nemiah, 1996). Irrespective of asthma severity people with alexithymia were more likely to be rehospitalized and had longer hospital admission than non-alexithymia persons with asthma (Dirks, Robinson & Dirks, 1981).

Psychological factors play an important role in both symptom experience and expression. As the major themes identified in the study the way one conceptualizes the disease, emotional, cognitive, behavioral and familial factors, self efficacy and attitude towards treatment influence management as well as the asthma control. Although each domain exerts its effect through different interactions and mechanisms, it is relevant to plan interventions incorporating these domains as part of pulmonary rehabilitation for an integrated management of the disease.

MAIN PHASE 2- DEVELOPMENT OF A MINDFULNESS BASED ASTHMA MANAGEMENT PROGRAM

Phase 2 of the main phase was conducted to meet 2nd objective of the study, which is to develop a mindfulness based asthma management programme. In order to minimize the subjectivity from the side of researcher and to enhance validity of the proposed intervention, data triangulation was used. After triangulating data collected from various sources such as, through the, analysis of commonly used techniques to address similar symptoms or disorders inferences from the focus group discussion and analysis of existing intervention for asthma and psychological models behind various techniques a draft of mindfulness based asthma management programme has been prepared.

Inferences from the review analysis

A review of literature was carried out by the researcher considering itself as a method of data collection. An extensive review of related literature was carried out with an objective of obtaining data regarding two different themes, such as

identifying the common techniques used to address symptoms or disorders similar to those recognized during main phase 1 of the research and identifying the existing interventions used for Asthma management and their related theoretical foundations.

a) Commonly used techniques to address similar symptoms or disorders:

Themes emerged from the analysis represent the potential areas to be addressed by the proposed intervention. The identified themes such as conceptualization of the disease, behavioural factors, cognitive factors, emotional factors, familial factors, asthma related self efficacy and attitude towards treatment are the targets to be intervened through the proposed mindfulness based asthma management programme. Researcher gone through the theories proposed and empirical works conducted to address these factors or factors similar to this. The rationale was that the themes emerged from the exploratory study was common in some of the psychopathologies like anxiety spectrum disorders and mood disorders. How these factors been addressed in those conditions were extensively reviewed. Text books on psychotherapies and empirical studies on the management of various neurotic disorders were kept as background, and on the basis of this, researcher identified a few techniques to be adapted to the proposed intervention for asthma. Hence although the techniques were suggested by the researcher, all of them were proved as effective in addressing the corresponding target factors on the basis of theory and empirical studies. The suggested techniques are given below.

- *Mindfulness:* The following elements support the rationale for using mindfulness as the framework of the proposed intervention.

- The accepting and non-judgmental facets of mindfulness proved to be effective in addressing increased vigilance in many pathologies (Sipe & Eisendrath, 2012)

- Interventions incorporating breathing exercises found to be effective in the management of asthma (Nagarathana, & Nagendra, 1985)

- High acceptance of mindfulness based interventions in general medical conditions; in fact the first clinical application of mindfulness was in pain management (Grossman, Niemann, Schmidt & Walach, 2004; Grossman, Tiefenthaler-Glimer, Raysz & Kesper, 2007).

➢ *Rather than limiting to a single psychotherapy model, techniques from different therapeutic frameworks can be used:* The cognitive behaviour model for the treatment of chronic pain (Morley, Eccleston & Williams, 1999) suggests that successful intervention addressing health issues should include addressing of thoughts, feelings, behaviors and physiology, and not on to the exclusion of others, and changes in one modality can't be expected to result similar change in other modalities. Hence in order to address the identified themes, techniques most suitable from different therapeutic models are incorporated than limiting to a single framework.

➢ *Education of psychological and medical aspects of asthma:* In many psychopathologies, education about their condition and explanation along

with guidance facilitated a better change (Cohen, Gottileb & Underwood, 2003).

- *Exposure tasks to safety behaviours and experience avoidance:* The panic control therapy proposed by Barlow and his colleagues in 1994 incorporated exposures to cues avoided, found to reduce safety behaviours, and panic shares a number of features in common with Asthma (Barlow & Craske, 1993).

- *Self monitoring tasks*: Diaries, notes or any form of records of self monitoring of target behaviours or events allow both the client and participants to understand the patterns and flare-ups; to identify significant elements preceding or following the event; to plan which all other elements to be intervened (Morley, Eccleston & Williams, 1999).

- *Altering coping strategies:* When people learn to use adaptive coping strategies their tolerance to physical difficulties increased and subjective ratings of discomfort decreased (Boothby, Thorn, Stroud & Jensen, 1999).

- *Systemic interventions:* Family dynamics have a role in the progression, maintenance as well as prognosis of several psychiatric and general medical conditions. Its relevance is again high when the index patient is having a long term or chronic disease. Involving family in the treatment found to facilitate better change (Yorke & Shuldham 2005).

a) Factors identified from the review of existing intervention techniques and theoretical models of Asthma:

Mostly extensively reported intervention frameworks for the management of asthma are educational, behavioural and cognitive-behavioural. Behavioural interventions are most frequently reported in empirical studies and literature related to asthma and the techniques are, stimulus control (Put, Van den Bergh, Lemaigre, Demedts & Verleden, 2003), relaxation (Huntley,White & Ernst, 2002), breathing exercises (Thomas & Bruton, 2014), education programs (Boulet, 2015), biofeedback and related self regulatory techniques (Lehrer, Vaschillo, Vaschillo, Lu, Scardella, Siddique & Habib, 2004) and cognitive restructuring (Kew, Nashed, Dulay & Yorke, 2016). Along with the therapeutic components, theories and explanatory models of asthma were also reviewed. Each theoretical model represents the major mechanism which is associated with the exacerbations or maintenance of symptoms. Classical Conditioning exerts its role by forming an association of the stimulus related to the experience of asthma and making it capable of eliciting symptoms (Rietveld, Van Beest & Everaerd, 2000). On the other hand, the consequences while experiencing asthma tend to work as maintenance factor and leads to persistence of symptoms (Schmaling, Smith & Buchwald, 2000).

Experiential avoidance and escape learning also plays a similar role in terms of negatively reinforcing the maladaptive behaviours such as avoidance and inhaler dependence. Cognitive models are based on the assumption that various distortions in the way one think and perceive body sensations leads to the subjective experience of asthma (Isenberg, Lehrer & Hochron, 1992; Stiener, Higgs & Fritz, 1987).

Along with analyzing techniques most widely used, a special care was given to strategies that should not be used in asthma. The strategies may be productive for some psychopathologies might be counter-productive to asthma, due to its biological basis. Hence techniques such as voluntary hyper ventilation, exposures to actual triggers were selected as strategies to be omitted from the proposed intervention. Voluntary hyperventilation found to create cooling of airways and produce airway obstruction (Meuret & Ritz, 2010). Exposures to triggers of anxiety are a common technique used in behaviouristic interventions, especially for panic. But triggers for anxiety might be the actual triggers for symptoms in the case of asthma (Yellowlees & Kalucy, 1990). This suggests the relevance of taking care while planning exposure tasks, in such a way that exposures should be to stimuli or activities which have been avoided only because of fear and not due to having a triggering effect.

b) Inferences from the Focus group discussion:

The purpose of the FGD was to explore the perspectives of clinical psychologists regarding the felt needs, feasibility and potential content and structure of the proposed intervention for asthma. It also explores how clinical psychologists would address the areas the researcher identified as the key areas to be intervened. The data collected through FGD was integrated with the suggested techniques based on the inferences from the interview with asthma patients and analysis of existing interventions for asthma. The major domains and related responses are given below.

Table 3.10: *Felt needs of a psychological intervention for Asthma: perspectives of FGD participants (N=8)*

Felt needs of a psychological intervention	Reported by (No. of participants)
To enhance the acceptance of the disease	7
To reduce secondary frustrations	7
To enhance coping strategies	6
To reduce comparison	5
To reduce distress associated with a chronic illness	5

The most frequent response from FGD regarding the felt needs of a psychological intervention was to enhance the patient's 'acceptance' of their disease. This acceptance stand is assumed to reduce the unrealistic expectations about the nature (chronic) and prognosis of the disease. *"It is important to make them aware of various aspects of their disease, like its duration, onset, expected range of outcomes.....This would enhance their acceptance, and psychological interventions applied to medical conditions can definitely do this*".

Interventions like Acceptance and Commitment Therapy are focussed on encouraging patients with physical illness to adapt with the disease demanded challenges rather than engaging in behaviours to suppress or eliminate aversive aspects of the disease, and are found to be effective. Here psychological flexibility is conceptualized as the ability to accept various aspects of the disease such as anxiety, disappointment and the illness itself (Dindo, Van Liew & Arch, 2017).

Another need that emerged from the FGD was the conviction that a psychological intervention can effectively manage emotions which are experienced

secondary to a medical condition. It was viewed as important because it would affect health care behaviours and overall approach one takes towards the disease. One of the participant remarked: *"Psychological intervention is important as it can address the emotions associated with a chronic disease such as anger, frustration and sadness"*. A study conducted by Ritz, Steptoe, Bobb and Edwards in 2006, supports this opinion that they found the most frequent triggers for psychological asthma are emotional in nature such as anger, disappointment, excitement, stress and depression. This shows the relevance of managing emotions as part of a comprehensive asthma management programme.

Other reported needs of incorporating psychological intervention are, to enhance patient's skills and strategies to cope with the ongoing demands made by the disease, to reduce distress generated from the experience of asthma and to reduce patient's unhealthy upward comparisons with people who do not have a medical condition.

Table 3.11: *Factors influencing receptivity of the program: perspectives of FGD participants (N=8)*

Factors influencing receptivity of the program	**Reported by (No. of participants)**
Motivation and willingness to participate	8
Stigma about psychological intervention	7
Over-reliance on pharmacotherapy	7
Underestimation of psychological moderators	5

Most dominant factors influencing the receptivity of the intervention by the participants are subjective motivation and willingness to participate, the model they

hold about Asthma and attitude towards a psychological intervention. For example, one participant responded that *"If they are having a pure medical model about their illness, then they may not be in a position to cooperate for a psychological intervention."* Having a bio-psychosocial model is considered to be very much relevant in the management of chronic medical conditions. Being aware of how certain psycho social elements within and outside modulate the disease course and progress in a number of ways, such as empowering patients to manage their condition, enhancing coping resources and also minimizing emotional distress and disability. So shift from a pure medical model is necessary for them to actively engage in the management of their disease (Kusanto, Agustian & Hilmanto, 2018). Other potential factors influencing the receptivity of participants are stigma about psychological intervention, over-reliance on pharmacotherapy and underestimation of psychological moderators. Another participant remarked that *"Sometimes even people having a psychiatric condition find it difficult to approach a psychologist because of the stigma associated with it.....so attitude towards psychological intervention would affect their receptivity"*. There are a number of empirical studies on stigma, which say that people who have hesitant to seek psychological help are usually afraid of getting a label of 'being sick' (Britt, Greene-Shortridge , Brink, Nguyen, Rath, Cox, Hoge & Castro, 2008).

Table 3.12: *Suggestions for improving receptivity: perspectives of FGD participants (N=8)*

Suggestions for improving receptivity	Reported by (No. of participants)
Awareness building	8
Reduced number of sessions	6
Not overemphasizing psychological factors	6
Bringing in The Pulmonologist	4
Room for related discussions	4

The most frequently occurred suggestion to improve participant's receptivity was to spend enough time and effort to educate the participants about the role of psychological factors in Asthma and the significance of a psychological intervention as part of an integrated asthma management. For example, it was said that "*I think educating about how various psychological factors that worsen their disease and orienting them about how a psychological intervention would help them out can make them more acceptable"*. Provision of clear picture about the structure of the intervention to be undergone, in terms of role orientation of therapist and client, expected time line and progress, how and why of therapy, etc., found to enhance clients willingness and receptivity (Seidler, Rice, Ogrodniczuk, Oliffe & Dhillon, 2018). Another suggestion was to schedule the number of sessions and duration at a tolerable level. Most of the participants suggested 7 to 10 sessions, with the duration of 45 minutes to 1 hour. One participant said "The *number of sessions should be practicable, in such a way that participants should not be overwhelmed by too many sessions."* A number of other suggestions were also made by the participants, to enhance receptivity, which included: not to frame their difficulties as purely psychological, keep in connected with their treating pulmonologists, and allow them

to talk about their difficulties other than asthma without deviating from the intervention targets.

Table 3.13: *Potential benefits of the proposed intervention: perspectives of FGD participants (N=8)*

Potential benefits of the intervention	**Reported by (No. of participants)**
Better prognosis	7
Well being	7
Improved acceptance	7
Enhanced compliance to treatment	6
Reduction of frustration	6
Better management of emotions	5
Reduction of Asthma maintaining behaviours	4

Participants with FGD reported that undergoing a psychological intervention along with their medical treatment would facilitate improvement more quickly than people receive only medical treatment. A number of randomized control group studies showed that there is a significant difference in many of the outcome variables such as, emotional, cognitive and physiological functions of asthma patients of various asthma rehabilitation groups versus control group (Sommaruga, Spanevello, Migliori, Neri & Manjani, 1995). Another anticipated benefit was improvement in the quality of life. One of the participants said *"Overall well being must be improved when they undergo a more integrated kind of treatment approach, than simply taking medicines"*. Despite having differences in the theoretical and procedural frameworks, successful psycho-social interventions for chronic medical conditions improve overall quality of life and physical functioning of the patients (Anderson & Ozakinci, 2018).

‘Acceptance of the disease and its chronic nature’ was another benefit perceived benefit reported. *“Knowing and accepting one’s condition as it is, would make them plan realistic goals and strategies to cope with it”*, reported by one of the participants. This ‘acceptance’ is considered to be one of the components of psychological flexibility, so that the person is able to accept both positive and negative experience related to their disease at the same time committed towards some actions for its management (Slattery et al., 2019). Other potential benefits reported were, better compliance to treatment, reduction of frustration associated with the disease, better dealing with emotions, reduction of maladaptive behaviours that maintain or worse the disease.

Potential contents suggested for the intervention

Through the FGD researcher explored various perspectives of the participants regarding the possible contents of the intervention module. To make the discussion covering all the targeted areas (themes emerged from the exploratory phase) researcher encouraged participants to discuss about the potential contents coming under each target area separately. FGD participants were free to come up with techniques from a wide variety of theoretical and therapeutic frameworks. Most frequently occurred responses are included in the following sections. Suggested techniques and frameworks to address each of the target areas are discussed separately below.

Table 3.14: *Potential contents of the intervention: perspectives of FGD participants (N=8)*

Target areas	Suggested contents	Reported by (No. of participants)
Conceptualization of the disease	• Asthma education	8
	• Awareness building	7
	• Check list of phenotypes	6
	• Mind body relationship can be educated	6
Cognitive factors	• Challenging maladaptive thinking	7
	• Acceptance enhancing strategies	7
	• Mindful awareness of symptoms	6
	• Evidence gathering	4
	• Relaxation	4
Behavioural factors	• Exposure to avoided cues	8
	• Mindfulness integrated exposure	7
	• Behavioral experiments	5
	• Education	5
	• Family involvement	5
	• Awareness facet of mindfulness	5
	• Acceptance facet of mindfulness	4
Emotional factors	• Awareness of the role of emotion on symptoms	6
	• Enhancement of coping strategies	6
	• Mindfulness based acceptance and non reactivity	5
	• Engagement in positive emotion generating activities	4
Self efficacy	• Solution focussed approaches	8
	• Evidence gathering	6
	• Daily monitoring of symptoms	6
	• Managing Relapse	5
	• Problem solving skill training	5

Target areas	Suggested contents	Reported by (No. of participants)
Attitude towards treatment	• keeping log diary and connecting it with the socio-occupational dysfunction	7
	• Daily monitoring of symptoms	7
	• Motivational interview	4
	• Psycho-education on secondary impairments	4
Familial factors	• Family involvement in sessions	8
	• Education on contingencies maintaining the behaviors, criticisms and over involvement	7
	• Co-therapist for adolescents clients	4

Conceptualization of the illness was one of the target areas encompassing misconception about Asthma, ignorance of the heterogeneity of asthma symptoms, Lack of awareness about the variation in timing and intensity of symptoms and misattribution of symptoms. The most frequently suggested content for enhancing the participant's conceptualization of the disease was education strategies. Asthma education was initially suggested, however later it was emerged that along with the medical aspects of the disease, role of psychological factors to be emphasized. So that psycho education is decided to be a better technique. E.g. *"I think psycho-education is a better term than asthma education, because you would be trying to impart knowledge about the psychological variables along with the medical aspects*". One additional suggestion while carrying out psycho-education was that, education about the psychological factors should be followed by that of biological factors. It was to make sure that the biological basis of asthma is not underestimated while focussing on psychological variables. Mind- body relationship suggested

being a major frame work for the entire education session. Successful psycho-educational programmes for asthma, imparts not only knowledge but also creates an instrumental attitude towards disease, which enhances their problem solving and self efficacy related to asthma and make them more empowered (Devine, 1996). Patients with asthma have poor understanding about the different variants of asthma expression. So patients having symptoms not related to wheezing had difficulty in accepting their condition as Asthma. To address this check list of various expressions of symptoms can be used for educating about different phenotypes, and participants can verify whether they belongs to any of those phenotypes.

The major targets come under cognitive factors are, fear of death, uncertainty and unpredictability about the disease, cognitive errors and anticipation of symptoms. Potential contents of the intervention for addressing these elements come under two major perspectives. One is challenging these thoughts and the second one is to take a more of dialectic approach emphasizing both acceptance and change. FGD participants remarked the rationale for both approaches; however since the target group of the intervention is patients diagnosed with asthma, the biological aspect was given consideration. Hence, it was suggested that when there is a strong biological basis for their fears and anticipations, rather than challenging dialectic approach would be more useful. Hence mindfulness and its facets of acceptance were finally suggested as techniques to be included as potential contents. One participant remarked that *"acceptance of the disease enhancing strategies, like mindfulness can be used here, as it would help them to form a realistic picture about the disease and motivate them to work on it with practicable goals"*. Another

suggestion was to illustrate the vicious cycle of thought, behaviour and symptom. E.g. one of the participants said "*you can actually draw the cycle, its components and the process through which the cycle completes, which might make it easier to establish the connections between their thoughts, subsequent emotions and physical symptoms"*. Another suggested approach was evidence gathering; in such a way that the participants can be encouraged to come up with evidences for their beliefs and to evaluate to what extend actually thoughts corresponds to real occurrences of the expected scenarios. E.g. *"If the participant labels himself/herself as a 'chronic patient' then he/she has to bring out evidences for the 'chronicity' and instances of not having asthma or experiences of functioning as others*". Progressive muscle relaxation was another suggestion came, before addressing cognitions in case any of the participants appeared to have severe anxiety. But considering the relaxation properties of mindfulness meditation, it was considered as an optional one.

The most dominant behavioural factors to be intervened are avoidance, safety behaviours and hyperventilation. FGD participants provided suggestions to address these factors from various point of views and frame works. Exposure was the most suggested strategy as it would reduce both avoidance and safety behvaiors. Exposures to both currently avoiding stimulus and one's own body sensations (they consider as symptoms of asthma) were recommended. Equally suggested was integrating mindfulness with exposure tasks, as it would facilitate both behavioural and cognitive benefits of being confronted with anxiety reducing elements. One participant remarked *"Adding mindfulness would make it easy, as the patient can normalize and accept fears and thoughts while doing exposures....and the non*

reactivity to the inhibitions would speed up benefits from exposures". The mental burden of practicing exposure tasks can be reduced by incorporating mindfulness, as it provides space for being aware and accepting of one's thoughts, fears, anticipations and physical sensations, that would probably make them step back from the exposures. Mindfulness integrated exposures are better comparing to mere exposures since dropout rates are lesser in the former than the later (Shirotsuki & Noda, 2018). Education about the counterproductive nature of avoidance and safety behaviours was another response emerged in the FGD. *"Before doing exposures, a detailed education about how these maladaptive behaviours contribute to their subjective difficulties related to Asthma should be done....otherwise exposures would be overwhelming for them"*, reported by one of the participants. A detailed description about how various psychological process are involved in the disease expression and maintenance are integral part of psycho-educational programs, hence it also prepares the clients for undergoing various process of the suggested intention (Smith & Jones, 2015). Behavioral experiments were suggested in case the patient has intense anxiety about exposures, as it would allow them to check their predictions and also helps researcher to observe and find out if anything else is there which maintains the avoidance and safety behaviours. However it was suggested as an optional strategy only.

Another suggestion was to involve family members for better management of avoidance and safety behaviours. It was also remarked that exposure tasks should be done only after getting opinion from the pulmonologist who is in charge of the client. The rationale was that even if it is certain that some of the behaviours they

avoid are not asthma triggering, as a caution and ethics, pulmonologists should also know about the elements to which the patient is going to get exposed. As one said *"we are not medical professionals, so what we might though as safe can be a real trigger also*". This indicates the relevance of a multi-disciplinary team and collaboration of professionals from different areas for a comprehensive management of asthma. A study conducted at to check the output of multi-disciplinary team based asthma management (consultant, psychologist, specialist nurse and physiotherapist) at Southampton, found to have significant reduction of hospitalization among poorly controlled asthma patients, who reported to have large number of prior hospital admissions (Burke, Davis, Evans, Flower, Tan, Ramesh & Kurukulaatchy, 2016). Hyper ventilation was suggested to be addressed with mindfulness awareness and behavioural experiment. Inhaler dependence was suggested to be reduced through gradual withdrawal after preparing the client (after discussing with the pulmonologists in charge).

Anxiety, anger and low mood were the major emotions associated with Asthma, and stress found to exacerbate asthma symptoms. Hopelessness and helplessness were there along with the low mood, which was found to be secondary to the uncertainty and unpredictability of symptom occurrence. Hence managing these emotional aspects considered to be a significant element of asthma management. From the FGD it was suggested that the first line approach to this is helping the participant to become aware of this connection between emotion and Asthma. One participant remarked "*before we manage emotions, first clients should know why they do that, so establishing that rationale will be fruitful"*. Exploration of

previous episodes of breathlessness followed by anxiety or anger or any other strong emotion was suggested. Hence self monitoring and reporting of these elements said to be included. Coping strategies enhancement was another suggestion. "*The strategies one use to deal with various stressors in life must influence the nature and emotions generated followed by this, hence learning healthy coping strategies would make it easy"*, reported by one of the participants. The non- judgemental and non reactive aspects of mindfulness were remarked to be helpful in the management of emotion, as it allow clients to step back and observe themselves without being preoccupied with it. Mindfulness based stress reduction programs applied to many of the chronic medical conditions incorporates management of emotions and stress responses, in which patients are encouraged to become aware of one's emotions and somatic sensations on a moment to moment basis and to take a mindful attitude towards it (Pbert, Madison & Druker, 2012). Engagement in positive emotion generating activities was another suggestion as one said "*positive emotions come from positive experiences, which they have to create rather than wait for it to happen somehow."*

Family related areas to be intervened are perceived and actual burden to the family members, over protection and related contingencies maintaining the behaviors. Suggested contents to address these include, involving family members to some of the sessions and educate them about the family dynamics, which are counterproductive in nature. Reinforcing elements to the disease can be traced out such as being over protective, criticisms, blame and attribution of illness to the patient and to be reduced. "*Involving family might be helpful, especially when you*

find family interactions or communications actually work as triggers. Inclusion of significant family members in the management of chronic illness is more effective than adopting a patient oriented treatment approach (Martire, 2005). Another suggestion was to assign one of the family members as co-therapist, in case the client is to be monitored and guided (E.g. adolescent client, or patients with poor treatment adherence). However it was also pointed out that it is not a necessary content, since it is not common that all asthma cases have pathological familial dynamics. So based on the nature of cases this aspect of the intervention can be included or skip.

Asthma related self efficacy was another area on which FGD happened. This area is about how patients with asthma feels about their ability to control their illness, and it were found that majority of the patients reported to have no control over their symptoms and feels helpless about it. The most reported response to deal with this was to include a solution focussed approach. "*Exploration and discussion on successful problem solving and coping strategies they have used in the past when they had asthma can be taken as evidences of their self efficacy*" reported by one of the participants. Daily monitoring of the symptoms was another suggested technique as this would encourage the clients to do more attempts self management. A chronic disease self management programme designed for older adults incorporated some of the suggested techniques, such as problem solving, symptom management, managing emotions, etc. Its results showed better outcomes on self efficacy and health literacy (Kim & Youn, 2014). Managing relapses was reported to be an important aspect under self efficacy enhancement, as one of the participant said

"preparing the client to manage next asthma experience would make them more confident, and mindfulness might help them to become more aware of bodily changes ". Enhancement of problem solving skills was another option, as the mastery over problems would make them more confident and self sufficient.

Treatment adherence related issues reported by the patients having asthma were, not being complaint on medications, fear of side effects of medicines and dependence of inhalers. Daily monitoring or writing log diary about symptoms and connecting them with the socio-occupational dysfunction and distress was the most recommended strategy to be included in the intervention. One of the participants reported *" Being aware of the consequences of asthma, and how and in what all ways it exert its effect on their life would make them more motivated to follow the treatment regimen"*. A study by Eakin and Rand (2015) on treatment adherence of asthma patients recommends self monitoring as one of the strategies to enhance medical adherence. It was also remarked that the relevance of compliance should be included as part of psycho-education itself. Psycho-education of how it interfere with daily life functioning. Motivational interview was another suggestion if the client's adherence is very low.

Selection of the intervention content

The final decision about the contents was taken on the basis of triangulation of inferences from the review of existing interventions in asthma management and commonly used techniques to address similar symptoms or disorders and potential contents suggested by the FGD participants. Researcher's clinical experience and feasibility constraints were also considered. Thus a few contents initially found as

potential had to be omitted, when all these factors being considered. The final contents of the programs are given in the table below.

Table 3.15: *Final contents of the proposed intervention*

Contents	Emerged from		
	a	**b**	**c**
Psycho-education	✓	✓	✓
Socialization to the intervention	-	✓	✓
Formal practice of mindfulness	✓	✓	✓
Mindfulness integrated exposures	-	-	✓
Present moment orientation	-	✓	-
Re-conceptualization of thoughts	-	✓	✓
Self monitoring	✓	✓	✓
Emotion management	✓	✓	✓
Problem solving and coping strategies	✓	✓	✓
Dealing with familial factors	✓	✓	✓
Home works	-	-	✓
Dealing with relapses	-	✓	✓

a-Analysis of common techniques used to address similar symptoms, b-Analysis of existing interventions for asthma, c-Focus group discussions.

As shown in the above table (Table 2.15) the final contents were fixed to be psycho-education, socialization to the intervention, formal practice of mindfulness , mindfulness integrated exposures, present moment orientation, re-conceptualization of thoughts, self monitoring, emotion management, problem solving and coping strategies, dealing with familial factors, home works and dealing with relapses. Details of each component are provided in the coming sections.

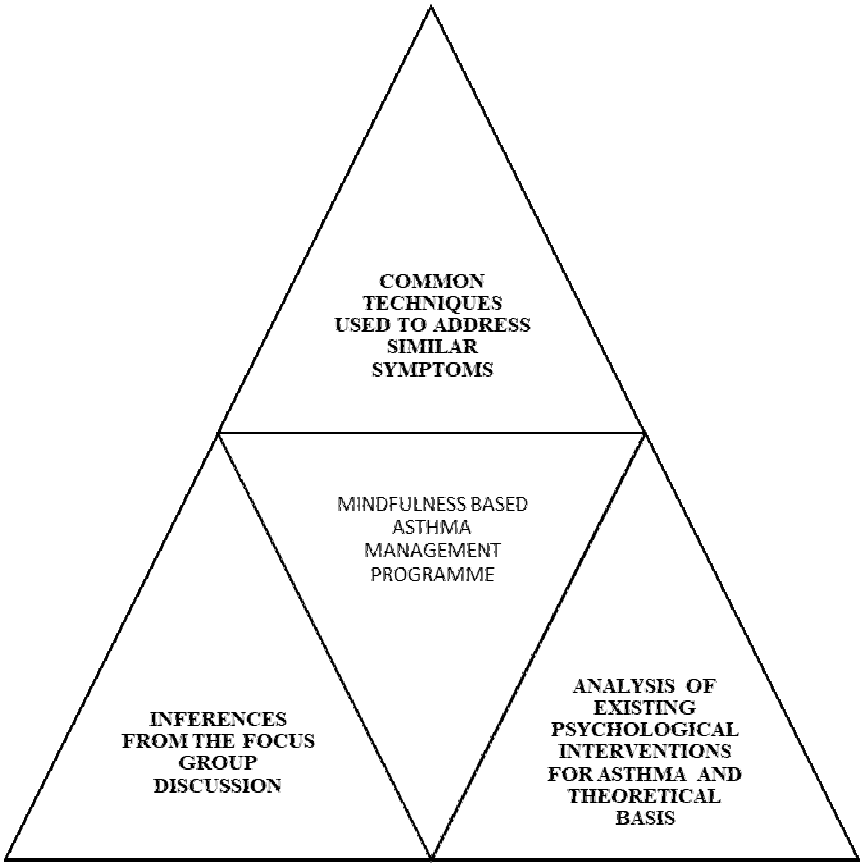


Figure 3.1: Process of data triangulation

Validation of the intervention

After finalizing the contents of the intervention, the proposed module was subjected to expert validation. The draft of the intervention was given to 5 subject experts (Clinical Psychologists) and their remarks, suggestions and opinions were noted down. The validation process helped the researcher to make further changes as may be required.

Table 3.16: *Responses obtained from the experts validation*

Dimensions	Average rating	Qualitative feed back
Adequacy of the title	3.5	Justification for the title can be provided.
Theoretical basis	4	Adequate
Components and rationale	3.5	To incorporate the Component of homework-from the beginning. Components can be customized To include client's Feed back
Order of the components	3	Not to follow a rigid order. Order can be customized
Mode of delivery	4	Online mode of delivery can be attempted
Intervention structure	3.5	Adequate

Numerical ratings (0-5), as shown in the table above, given by the experts for different dimensions of the management programme indicate that all the dimensions were highly rated. Highest ratings were given to dimensions related to the theoretical basis and mode of delivery of the management programme. And, the lowest rating was given to the dimension related to the order of the components in the management programme.

Title of the intervention was remarked as adequate; however it was also suggested to clearly mention the justification for adopting mindfulness. Researcher has already reported the rationale for mindfulness in the previous chapters, so it was not repeated in the intervention module again. It was also suggested that the components can be customized based on the nature of client's difficulty without losing the essential nature of intervention.

To include client's Feedback from the beginning was another suggestion received. Taking feedback from the clients with the help of a form developed by the researcher (including qualitative and quantitative feedback) might be helpful in assessing the utility of the intervention module. Along with this, a recap of the entire intervention and learning acquired/ changes perceived in one's emotions/ cognition also suggested to be helpful.

It was suggested that the component of homework can be incorporated in sessions from the beginning to facilitate self-efficacy. E.g.: behavioural experiments and asthma diary.

Another suggestion was regarding the order of the various dimensions included in the management programme. One of the experts had an opinion that it'd be better not to follow a strict sequencing of components while implementing the intervention programme. Instead, the order can be varied according to the characteristic of the client. The components of 'being in the moment' and 'observing thoughts as thoughts instead of facts' can come earlier than the component of 'reducing experiential avoidance' for participants who has difficulty in conceptualizing mindfulness. Since some clients may take time to understand the concept of mindfulness itself, giving metaphors during this phase along with the behavioural experiments can help them gain a better sense of the concept before embarking on the practice. This can also build the client's resources and reduce their anxiety when attempting to reduce experiential avoidance.

It was recommended that a hierarchy of exposure tasks to be constructed after discussing with the participants. Online mode of delivery was another suggestion reported.

Outline of the Mindfulness Based Asthma Management Programme (MBAMP)

After expert validation, a revised draft of the intervention was prepared. The researcher suggests that the target group of this intervention preferably meet some requirements/conditions.

The intervention works best when the client is an adult who has:

- A primary diagnosis of partly-controlled or uncontrolled asthma
- No other major medical or psychiatric co-morbidities (though people with subclinical level of anxiety or depression could be included)
- Age ranging between 18 and 65 years
- Reading and writing ability (Malayalam)
- Good meta-cognitive abilities
- Minimum 2 years duration of illness

This mindfulness based asthma management programme that involves 10 sessions addressing various psychological correlates of asthma such as the client's conceptualization of illness, behavioural, cognitive, emotional, and familial factors, and their attitude and compliance towards treatment and asthma related self efficacy. Techniques from different psychotherapeutic models have been incorporated; however the basic frame work has been determined by mindfulness. The rationale for the inclusion of techniques from different models is that the factors to be

intervened were from wide areas like familial factors, conceptualization, problem solving skills, etc., all of which were impossible to be addressed by mindfulness alone. So, different techniques were selected on the basis of how well it would be able to address the identified factor/area to be intervened (determined through theoretical as well as empirical reviews). This module is prepared in such a way that each session is presented with its details such as the session number, techniques used, rationale, components involved (processes) and expected outcomes. All the components of the intervention are arranged in a sequential order to make sure that the interaction between the adjacent components facilitates the attainment of targets of each session. For example, for achieving acceptance and cooperation from the participants, psycho-education as well as socialization with the mindfulness framework was necessary. So, these components were organized in the beginning sessions. Similarly, behavioural factors were considered for intervention prior to the cognitive factors, because the changes made in the former would facilitate us to work easier on the later.

Mode of delivery of the intervention is individual and face-to-face. The rationale is that Asthma is a heterogeneous condition, so that the presentation of symptoms, intensity and frequency would differ from person to person. This 'heterogeneous' nature would be a contraindication for considering a group mode of delivery. The strategy of delivery should be uniform across asthma patients; however necessary customization can be adopted without losing the integrity of the intervention. Schedule of the intervention delivery is determined as ten sessions- one per week, taking around two and half months to complete. Ten sessions were fixed

as it would require around 10 hours to address the identified psychological correlates in asthma. One week interval was given between sessions, as the participants require time to acquire and practice the therapeutic goals achieved in the previous sessions.

Trained clinical psychologists are eligible to administer the intervention. The rationale is that, though the global framework used for this intervention is mindfulness, techniques and theories from various psychotherapeutic models have been incorporated. Hence someone who has expertise and experience in using these different frame work and techniques would only be able to deliver it successfully.

The major therapeutic elements in each session are given below. Certain sessions are clubbed together while reporting, like session 2 and 3, 4 and 5 and 6and 7. The rationale is that these sessions address a single factor/area and it required more than one session to achieve the goal. (E.g. 2^{nd} and 3^{rd} sessions were addressing behavioural factors, 4^{th} and 5^{th} cognitive factors and 6^{th} and 7^{th} emotional factors).

Session 1:

- Psycho-education - Shifting medical model of asthma to biopsychosocial model.
- Mind-body relationship (Mediating role of stress and emotions).
- Orientation and socialization of mindfulness frame work and the intervention program.
- Introduction of body scan meditation.
- Introduction of Asthma diary.

Session 2-3:

- Reviews of body scan meditation and asthma diary.
- Addressing asthma specific maladaptive behaviours - experiential avoidance, safety behaviours and hyperventilation and medicine dependence.
- Discussion on facets of mindfulness - present moment awareness (Being in the moment).
- Gradual exposure to avoided activities-Home works.

Session 4-5:

- Review of body scan meditation and exposure tasks.
- Introducing sitting meditation.
- Addressing cognitive aspects - anticipation to symptoms, cognitive errors.
- Discussion on "Thoughts are not facts"

Session 6-7:

- Review of sitting meditation, exposure tasks and asthma diary.
- Discussion on mindful 'awareness' - being in the moment.
- Emotion regulation using mindfulness - early picking of emotional cues, non-judgmental acceptance.
- Importance of willingness to experience anxiety and negative emotions.

Session 8:

- Review of meditation, asthma diaries and home works.
- Discussion on problem solving and coping skills.
- Maladaptive elements of emotion suppression.

Session 9:

- Discussion with family on the contingencies maintaining the behavior, over protection and blame.
- Education to family members on the importance of exposures and over involvement.
- Dealing with the 'sick role' and asthma attacks.

Session 10:

- Reviews of sessions.
- Treatment adherence.
- Application of mindfulness as a philosophy in daily life.
- Dealing with relapse - Mindfully aware of early signs and management.

Description of the components:

i- Psycho-education

Rationale: psycho-education is a systematic psychotherapeutic intervention, which focuses on informing patients and their relatives about the illness and its treatment, facilitating their understanding and personal responsibilities for participating in the

intervention and also to provide support to cope with their illness (Bauml & Frobose, Kraemer, Rentrop, & Pitschel-Walz, 2006). The aim of this phase in intervention is to educate the client both the psychosocial correlates of asthma along with its biological components, so that their perception of illness from a biological model shifts to bio-psycho-social model. Having a bio psychosocial model helps them to have a readiness for a psychological intervention, and prepares them to take responsibilities in the intervention program. Psycho education is construed as an "obligatory-exercise. Psycho educational programs are associated with low rates of relapse, good compliance with treatment and better psychopathological status (Pekkala & Merinder, 2002).

Components: The client is educated about the term 'Asthma', its typical symptoms, origin of symptoms, heterogeneity in presentation, early warning signs, chronic nature of illness, vulnerabilities, treatment and chances of relapse. The client is explained the mind-body relationship. The focus is on emphasizing how one's thoughts, emotions and subjective experiences are affecting the body and vice versa. The client is encouraged to give examples from his/her daily life to make sure that he/she understood the concept. Therapist used 'metaphors' to generate more clarity about the mind-body relationships.

Expected outcomes:

Good therapeutic alliance

Better understanding about their illness

Shift from a biological model to bio psychosocial model of Asthma

ii- Socialization of mindfulness frame work

Rationale: The client's participation and willingness are influenced by the understanding of the therapy framework. It helps them to understand the nature of therapy process, what they are supposed to do, what therapist is aiming at. Socialization provides a mental set, which facilitates the processing of disconfirmatory evidences (Wells, 1997). This mental set helps the client to easily fit into the process, and also reduce anxieties and uncertainties related to therapy. More over clients do not know in advance that they would be asked report about difficulties and changes on a regular basis, they do not know that the therapist would ask them to summarize discussions of significant problems, give feedbacks, remember and practice major session learning and do home works. So briefing about all these in advance will help them to take responsibility in therapy. Since here the client is primarily having a medical diagnosis, getting familiar with the mindfulness framework is highly needed. Mindfulness has been conceptualized in a number of different ways, like a philosophy, a meditation technique, a clinical intervention, etc. Since the origin of it is from Buddhism, a religious flavour has been attributed to it. Hence it is highly important to present the therapy frame work as a clinical one rather than a religion based philosophy, especially when apply to a multicultural sample. This would help to have an acceptance and unbiased attitude from the client’s side.

Components: 'Mindfulness' as a concept was explained to the client. Difference between 'mindfulness' and 'mindless' has been discussed, with daily life examples like being automatic on various tasks, and forgetting things they use to do on a daily

basis and so on. Mindfulness as an intervention, its application in other conditions, role of the therapists, responsibilities of the clients was explained to the client. Three facets of mindfulness -awareness, acceptance, and non-judgmental was elaborated and connected with in the context of asthma symptoms. Time frame and average number of sessions were discussed. Client was encouraged to ask and clarify their queries and necessary information regarding the therapy process was provided.

Expected outcomes:

Willingness to take responsibility in therapy process

Better understanding of the intervention

Active participation in therapy

iii- Reducing avoidance and safety behaviours

Rationale: when confront with a cue or feared stimulus, people often uses certain subtle behavioural aids to reduce their anxiety (Sloan & Telch, 2002). For e.g. Patients with panic disorder use to lay down when they feel slight dizziness, as an attempt to prevent a full blown panic attack. In the similar line, patients with asthma carry emergency medicines and inhalers all the time in order to prevent an expected asthma attack. Safety behaviours and, experiential avoidances increases anxiety, since those behaviours are negatively reinforced (Salkovskis, 1999). Since these behavioural aids help in getting a short term relief from anxiety, these behaviours tend to be repeated and maintain anxiety. As it is continued it prevents a long term cognitive change. Hence people continue to believe that they are free from the expected 'worst catastrophies' because of doing those behavioural aids (Clrak,

1986). These behaviours are maladaptive in nature as they never allow someone to confront anxieties provoking stimulus and reach habitation. Direct avoidance of situations and stimulus are considered to be a variant of safety behaviours. For example avoiding places having certain perceived features, or activities involving physical strain. Avoidance responses also maintain as well as strengthen anxiety (Salkovskis, Clark & Gelder, 1996).

Components: The client is explained the concept of safety behaviours and avoidance behaviours, in-terms of temporary strategies they use in daily life to avoid anxiety. Rationale for addressing this in session was clarified. Emphasis was given to the point that these are actually counterproductive in nature, as they actually enhance anxiety rather than calming them down. Client was encouraged to enumerate various safety and avoidance behaviours they do in the context of asthma such as carrying medicines all the time, avoiding physical exercises, kitchen works, social participation, etc. Therapist encouraged reducing them and initiating sessions on gradual exposure. Since the intervention is based on mindfulness frame work, the elements of mindfulness such as continuous awareness of thoughts, body sensations and other psychological aspects have been emphasized to notice while dealing with the safety behaviours. Non judgement and non reactivity elements were also incorporated in the session. Home works given to practice and record details of avoidance and safety behaviours being reduced, in order to maximize generalization.

Expected outcomes:

Reduction of avoidance and safety behaviours

Better tolerance of anxiety related to asthma symptoms

iv- Being in the moment:

Rationale: Being in the moment refers to the moment to moment awareness of one's experiences, and considered to be the core feature of mindfulness. This has the curative value, as this would help the client to keep away from 'anticipation' of symptoms, present moment awareness would act as a barrier for rumination, and expectation, which would finally end up the client in real symptoms.

Component: The rationale for the present moment awareness has been explained to the client. To begin with simple activates in daily life where mindfulness can be applied would be discussed, such as eating, bathing, or walking, in which focus has been given to 'awareness', 'acceptance', and non-judgmental attitude without reacting. Trials can be practical within the session for few minutes. After which home works can be given to generate the concept. Along with this how it would be helpful in asthma was highlighted.

Expected outcomes:

Enhancement of the skill of being with the ‘present moment’

Improved understanding about mindfulness

v- Re-conceptualizations of thoughts - thoughts are not facts.

Rationale: As in many emotional disorders, maladaptive thoughts are the major source of distress in general medical condition. Taking these thoughts as reality, and responding to it would generate more negative emotions, and subsequently more maladaptive behaviours. The way feel about various events are largely determines by the way we perceive (Beck, Rush, Shaw & Emery, 1979). Beliefs like "I have an illness without cure", "I am trouble to others", "I am going to get attack at emotional times", are common in asthma patients. Understanding them as just thoughts, as other mental events not as facts is relevant here. And this would reduce the reality to these thoughts such as taking a sick role, hyperventilating to stimulus, and unwanted anticipation. There is a positive feedback loop between physiological arousal and anxiety which gradually end up in a full blown respiratory attack (Margret, Ehlers & Roth, 1987). In the similar line there is a vicious link between hyperventilation and anxiety. When someone hyper ventilate a number of somatic symptoms are generated drop of anterior CO2 levels. This connection between over breathing and somatic symptom usually misinterpreted as a sign of physical danger or upcoming respiratory attack. This gradually leads to increased anxiety and this cycle continues. Selective attention and heightened focus on bodily events leads to a lowered threshold for perceiving sensations and hyper vigilance. These processes again lead to increase in the subjective intensity of these bodily events. Education and discussion about this connection and re labelling of body sensations found to be effective for reducing anxiety (Clark, Salkovski & Chalkley, 1985). The mindfulness based approach to thoughts is that thoughts are just like any other

mental events which comes and goes. Observing, being aware of one's own thoughts without emotionally engaging with it (non-judgmentally and non-reactively) is effective in reducing rumination as well as distress. Kabat-Zinn (1994) suggests that mindfulness attitude facilitate considering thoughts as they are "just thoughts" rather than a counter part of reality and do not associate with escape or avoidance responses.

Components: The link between thoughts and emotions was discussed. Behavioural experiments were conducted to check the validity of these thoughts, and encouraged to practice at home. Behavioural experiments give chances to test the catastrophic predictions and also help to tolerate anxiety. Here client make predictions before they do it and then records whether that actually happened or not. By re-evaluating their thoughts over a period of time client can generate evidences against the predictions. (E.g. - Asking client to do physical tasks and to see whether it induces asthma afterwards). Body focus tasks can be done to demonstrate how indulging with one's body sensations can generate anxious thoughts. Client is instructed to focus on any body part like finger tips or toes, and to report the questions like the following.

"Were you aware of these sensations before you focussed you attention to that part?"

"What happened to the sensation when you focussed on it?"

"How this might have related to your problem?"

Client is encouraged to see on 'thoughts as from an outsider's perspective', as many other mental events. It's coming and going nature was emphasized using metaphors like clouds passing in the sky, or waves coming and going in the sea, etc. The non-judgmental and non reactive attitude towards thoughts was highlighted using sitting meditation.

Expected outcomes:

Awareness of the link between thoughts, emotions and perception of symptoms

Reducing rumination and indulgence with anxiety inducing thoughts

Easiness in dealing with maladaptive thoughts

vi- Formal practice of mindfulness

Rationale: To incorporate the mindfulness concepts and to practice in a more coherent way two forms of formal practice mindfulness can be used, body scan meditation (Appendix XIII) and sitting meditation (Segal, Williams & Teasdale, 2002) (Appendix XIV). Though both of these variants are focusing on exhuming awareness, acceptance and non-judgmental attitude, body scan is more emphasizing on autonomic arousal. This would help the client to be aware of even minute sensations in one's body, and accepting them as normal experiences without overreacting to it. Whereas sitting meditation gives more importance on cognitions, such as thoughts and memories. This phase is incorporated in session, since in asthma patients automatic arousal and it's misinterpret as symptoms of another

asthma attack formed to be relevant for addressing. Sitting meditation would facilitate acceptance of thoughts as thoughts and also normalization.

Components: Both forms of meditations are 45 minutes taking. In body scan meditation client is instructed to observe only body sensations from head to toe in an accepting and non-judgmental way. In sitting meditation observation begins with one's breathing, then gradually moves to body sensations, sounds and finally thoughts. Hence also client is given emphasis that mere observation is not enough, rather the accepting, non-judgmental acceptance also to be accompanied. It was suggested to do each form once a day and record practice details as part of home works. Application of mindfulness in general tasks such as mindful eating, bathing, etc, were also suggested to maximize generalization and also to incorporate the philosophy in daily life.

Expected outcomes:

Practice and generalize mindfulness as an intervention

Maximize the three facets of mindfulness (awareness, acceptance, non judgemental attitude)

Applying mindfulness as way to deal with asthma related symptoms and anxiety

vii- Mindfulness integrated exposure

Rationale: Facing and getting habituated with anxiety is found to be curative (Barlow, Raffa & Cohen, 2002). According to Barlow’s catastrophic

misinterpretation theory, there is a false alarm system, which switch on an anxious response both physiologically and psychologically without the presence of an actual threat, and calls for panic attacks, e.g., interpreting ones interceptive cues (e.g. Racing heart as respiratory arrest) as a signal of upcoming attack (Salkovski, Clark & Gelder, 1996). From the pilot phase it was found on that certain behaviours, activities and situation (E.g. - Laughing, interacting with others, physical activities, etc) were frequently avoided by clients with asthma. Such misinterpretations can be corrected through exposure tasks. Exposures with feared stimuli provide disconfirming evidence that confronting with that stimulus actually not eliciting an anticipated catastrophe. From this clients experientially learn that these stimuli are in fact safe and which in turn increase chances of confrontation and subsequent reduction in anxiety (Hermans, Craske, Mineka & Lovibond, 2006). Mindfulness integrated exposures to those stimulus would facilitate habitualization, as they became more experientially exposed, and more open to anxiety without overreacting. Prolonged exposures in the absence of anticipated catastrophe lead to desensitization with a reduction in emotional over reactivity (Kabat-Zinn, 1982).

Components: Client has been prepared for exposure before initiating in the session. For which the rationale behind exposure, and the role of mindfulness while exposure were explained. While exposing instructions have been given focus attention directly to the body sensations (chest tightness) as well as towards various cognitions (“I can’t handle this”) emotions (anxiety, irritation) and urges (to give up the exposure). In order to be more willing, exposure tasks were arranged on hierarchy and began with least anxiety provoking situations and gradually moved to

more anxiety inducing scenarios. To keep a track on the exposures, home works were given, and client was instructed to record, time, duration and easiness of exposures. To begin with exposure tasks were done with in the presence of therapist. Emphasis was given to the fact that exposure time should be long enough to the extent that at the end of the exposure at least 50% reduction in anxiety must have felt subjectively. The client was asked to be aware of thoughts/fading coming to mind while in exposure with or any deliberate attempt to control or minimize it.

Expected outcomes:

Confrontation with anxiety inducing cues

Better anxiety-tolerance

Reduction in avoidance responses

viii- ***Dealing with emotions***

Rationale: Being aware of one's emotions and regulating them is relevant as they can be linked with counterproductive behaviours. Anxiety and depression are found to be co morbid with asthma which can worsen asthma symptoms. Mindfully accepting emotions as it is with a non-judgmental attitude and being aware of waves of one's emotions would facilitate non-reactivity to them. The basic assumption is that as you learn to observe emotions, you tend to realize that emotions grew, change and gradually diminish. The two insights or awareness from this continuous observation is that emotions have a natural life span. Hence after a point it diminishes its quality and intensity just like a wave. The second awareness is that being able to describe ones emotion itself provides a degree of control over them."

Describing emotions often has the effect of building a container around them, which keeps them from overwhelming you" (Mckay, Rogers & Mckay, 2003). Researches show that the 'step back and watch" attitude of mindfulness is associated with less emotional behaviour. Among the facets of mindfulness, acceptance is found to contribute to less aversive reactions towards emotional stimuli (Sauer, Walach, Schmidt, Hinterberger, Horan & Kohls, 2011). This is consistent with the Buddhist theoretical root that staying equally with both unpleasant and pleasant experience is the core of mindfulness (Hart, 1987).

Components: To begin with, encouraged the client to find an emotion that they are feeling in the current moment, and visualize the event with details like where he/she was, what was happening, what he said, how he felt. Once the emotion is clearly recognized, client was encouraged to describe to the self about the changes in quality, intensity and type of emotion they were feeling. It is continued until there is a significant change in quality, and they have the sense of wave effect of their emotions. With the help of formal mindfulness practices, client was encouraged to be aware of the sensations, thoughts and behaviours associated with self when they are feeling depressed or anxious. Mindful awareness itself has a healing power, since it is an integral part of emotion regulation. Emotions are conceptualized as waves coming and going, so that simply being aware and accepting of one's emotional waves without reacting to them facilitates to view them just as a present moment mental event. Along with this ventilation of emotions and enjoying in things that provide more of positive emotions were suggested. While discussing all these, relation between emotional shifts and asthma symptom was highlighted. How

managing emotions would tend to help dealing with asthma was explained. Mood diary was asked to prepare, in which overall mood of each day was represented using smiles and numbers.

Expected outcomes:

Attempts to recognize ones emotions

Awareness of the connections between emotions and physical symptoms

Capacity for being with negative emotions

Attempts to manage emotions

ix- Problem solving and coping strategies

Rationale: Emotion focussed coping strategies with the illness as well as daily life scenarios are formed to be maladaptive. Similarly perception of stressors and the way one manages with them determine the emotions they feel. Acquiring skills to deal with problems one confronts with and engaging with more of a problem focussed coping strategies would be more helpful, from the present study-pilot phase it was found out that when patients with asthma confronts stressors, they experience asthma symptoms more intensely. Main targets of problem solving training is to increase clients awareness about ongoing interpersonal problems, to understand the effect of this on asthma symptoms and to acquire skills to deal with these problems including assertiveness. Researchers on persons with chronic medical conditions also highlight the significance of incorporating problems solving and coping skills into the psychosocial management programs.

Components: Discussions were initiated on the ways people deal with the problems or stressors in their daily life. Major components of problem solving strategies have been illustrated with the problems they encountered recently such as (a) identifying the problem (b) listing out solutions (c) weigh the advantages and disadvantages (d) select the best solution (e) implementing solution (f) review the solution (g) maintenance and generalization of the solutions. Home works have been given to generate a number of hypothetical daily life problems and the way they solved them. Emotion focused and problem focused coping styles were differentiated. Clients were encouraged to come up with examples showing the way they deal with stressors in the past. Cost benefit analysis has been done to check the effectiveness of different coping styles. Healthy coping mechanisms such as, dealing with the problems, normalization and acceptance, engagement, creative productivity, etc, were emphasized and encouraged to try them.

Expected outcomes:

Better dealing with daily life stressors

Gain inference about the coping style they used

To practice healthy coping strategies

x- Dealing with familial factors:

Rationale: one of the basic assumptions of systemic perspective is that everyone in a family is affected by the illness of one member as it changes their life style. And patients are more likely to relapse when there is high expressed emotion in their living environment (Brown, Birley & Wing, 1972). Familial factors such as

contingencies maintaining the behavior, burden, perceived burden to family, over problem and criticalities have been proven to be maladaptive for recovery by a large number of research works. Having an understanding about the nature of illness, and the management programme would insinuate changes in the client, since the environment and behaviour has a reciprocal relationship with his behaviours.

Components: Psycho education about asthma and its bio-psycho-social correlates were explained to the significant family members. Then nature of therapy was discussed. The nature of interaction with the client was assessed and evaluated for contingencies maintaining the behavior, over involvement and criticality. Based on the type of response family shows towards the client, family sessions were customized. Family rituals, cohesiveness, reinforcements, communication patterns, dealing with crisis were examined and the significant areas have been intervened.

Expected outcomes:

Involvement of family in to the intervention program

Reduction in unhealthy pattern of family interactions

Support from family for change

Understanding about how to deal with the client while having asthma attacks

xi- Homework

Rationale: Home works used in the management programme is aimed at practicing and generalizing the skills and changes acquired from intervention program. It also speeds up the therapeutic process as the client is in touch with the therapeutic

elements in their daily life activities. Patients who carry out homework assignments progress better in therapy than who do not (Kazantzis, Whittington & Datillio, 2010). Home works enhances sense of self efficacy as it can maximize what one has learned from therapy sessions (Beck, 2011). Self monitoring of one's problems and exposure to anxiety provoking stimuli and situations as home works assures maximum generalizations of therapeutic outcomes. Asthma diary is used to record the symptoms, subjective rating of difficulties, perceived control and the strategies they used. It also gives a daily basis feedback to the client which can act as reinforcement for further efforts from the client. Exposure tasks were also given as home works, and its details similarly recorded.

Components: Relevance of home works and the necessity of generalization were explained. Asthma diary was introduced and elements to be checked were given in a written format, which included date, situations, physical sensations, thoughts appeared, how they managed and the total number of asthma attacks. Hierarchy for exposure tasks were given and practiced in session mindfully. Exposure tasks were personalized as per the client's needs. Finally another note was asked to write about the experience of mindfulness practice, which includes duration, difficulties, and perceived benefits associated with mindfulness. After explaining the concept of mindfulness in daily life, client was encouraged to apply it on daily activities like brushing, bathing, eating, driving to ensure maximum generalization and so mindfulness as a philosophy.

Expected outcomes:

Practicing skills acquired in each session

Be in touch with the intervention till the next session

Continuous self monitoring

Applying skills learned in daily life scenarios and maximizing generalization

xii- Dealing with relapses

Rationale: Asthma is considered to be a chronic medical condition, where symptoms and attacks can reoccur unexpectedly. In the current study, meaning of the term 'relapse' is not restricted to the reappearance of symptoms after along symptom-free period, but it also denotes the re-occurrence of symptoms in a short span. So being aware of relapses and preparing to deal with it is critical. The concept of relapse prevention is initially associated with substance addiction, but later applied to a number of psychiatric and general medical conditions. The assumption is that when a pathological condition relapse the behaviours, cognitions and emotions associated with that also re appears. Relapses of thoughts, safety behaviours and anxiety secondary to them are considered to be normal, and to be mindfully accepted. Maintenance of mindfulness as a skill would help them to deal with the lapses more easily, as it would help them to observe the changes as they appear, accept non-judgmentally and cope with them in adaptive ways (Marlatt & Kristeller, 1999). Preparations to deal with the coming experiences of asthma enhance their sense of control over the disease, which in turn enhances their self efficacy.

Components: The nature of asthma and reoccurrence of symptoms were educated. In that context anticipation and fear about attacks and its possibility to end up in real difficulties were explained. The need for continuous exposures, and maintenance of mindfulness in terms of awareness, acceptance and non-judgmental attitudes were highlighted. Relevance of moment to moment experience than anticipatory symptoms, accepting them avoidance when difficulty comes were pointed out.

Expected outcomes:

Preparation to deal with a relapse

Willingness to deal with cognitive and emotional factors when in relapse

To utilize the skills acquired from the intervention if relapse occurs

PHASE3: CLINICAL TRIAL RUN OF THE INTREVENTION

The 3rd phase of the main phase was about the clinical trial run of the designed MBAMP on 2 participants diagnosed with asthma (met the inclusion and exclusion criteria of the research), for the fine tuning of it. Case analyses of the participants are written in order to get a detailed picture of their psycho-social histories. Total 10 sessions were conducted. Details of how the asthma management programme has been delivered are given below as session notes. To make it more clear, important piece of conversations between the investigator and participants are given in verbatim as examples. Sessions addressing common domains are presented together for not losing the continuation and flow. Procedure for delivering each session was kept as uniform as possible to ensure that the intervention has been provided in a similar way to both the participants. Hence session notes were

arranged in such a way that each session includes responses of both participants in order to avoid repetition and monotony.

CASE ANALYSIS 1

Name	:	Ms.S
Age	:	29 years
Sex	:	Female
Education	:	PhD
Occupation	:	Teacher
Socio-economic status	:	Middle
Marital status	:	Unmarried
Family type	:	Joint
Duration of illness	:	Since childhood
Informant	:	Participant
Information	:	Reliable and adequate

History of illness and psycho-social functioning:

Ms. S is 29 years old unmarried female hailing from middle socio-economic status family, from Kozhikode, Kerala. She was diagnosed with asthma when she was around 2 years old. According to her the difficulties related to asthma were there throughout her life, though she can't recall the very early remote incidents. The onset has always been triggered by exposure to rain cold. The first sign has been an itchy throat which would gradually lead to coughing and breathing difficulties accompanied by wheezing. During school years her life was very much restricted

because of the illness. She was not allowed to play as other children at school. According to Ms S, she was an active child who preferred to take initiative and responsibilities at school and was very social with others. Academically she was above average and used to be an active member of various programs conducted at school. Though her parents were very much caring, her mom used to scold her whenever she had asthma. This in fact created a conflict with her mother, during childhood. She was not allowed to play at ground as other children do because of the fear of having asthma attack. On the other hand she recalls that sometimes it was used as an excuse too, that she received an extra care and consideration of 'being sick' at school. Up to high school she had frequent asthma attacks and required hospitalisation many times. After that period, the frequencies have come down, although her treatment regimen was kept the same. After joining for graduation she had a pretty good improvement. That was the first time she was moving away from the home and having a relatively independent life. She was staying at hostel and according to Ms. S that was the most enjoyable period in her life. She enjoyed the freedom which she couldn't get at home. She assumes that, it may be due to a change in environment and a positive lifestyle she was symptom-free for quite a long time during her college days. She occasionally had difficulties related to asthma- when she was exposed to rain, cold and climate change. Even when she had asthma episodes, it was easy to distract her towards many things at college; hence she was not preoccupied with the illness. The incidence of emergency visits to hospitals was also significantly reduced. In college, she had many friends and she worked in political groups in the campus. As part of the student's union works, she had to work in the late nights many times, but it never triggered asthma. According

to her she used to be very busy on those days, and the group activities and joined works were very much relaxing for her. However she recalls an incident in which she had a severe asthma attack. She had an argument with her roommate on certain personal matters, and she lost control. The arguments ended up in an emotional turmoil and she cried a lot on that day. After a few hours, she had a severe breathing difficulty and she had to be admitted in the hospital. She assumes that the emotional turmoil and crying would have triggered asthma in that incident. According Ms. S she never avoided travels and tour programs because of the disease. And the very interesting fact for her is that she never had a breathing difficulty when she had gone for tours and trips, despite of exposing to significant climate changes and cold. After completing her post graduation she began her research in the same institution. During that time also she reported to have occasional asthma attacks, which would last for few days and then subsides and disappears. During that time also she had been to hospital admission a number of times. She was in a romantic relationship during that time. Secondary to conflicts with her boy friend she had a quite bad time, having a low mood and reduced social participation. But after a few months she could come out of it. She described herself as someone who is an extravert, social in nature but emotionally very much sensitive. She is afraid of rejection; she had multiple conflicts with some of her intimate relationships. She used to feel mood fluctuations very frequently; however she always tries to manage it before it gets overwhelming. After completing PhD she started working as a teacher, where she had a good professional atmosphere. But lack of friends and a good support system made her feel empty some times. Her professional life was reported to be satisfactory. In the last 6 months her symptoms improved partially, however a few

instances of emergency visits to hospital were there, due to severe wheezing and heaviness on chest.

Mental status examination doesn't indicate any finding regarding the possibility of psychopathological co-morbidities. Her perception, thoughts, mood and cognitive functions were found to be adequate and intact. Anxieties and preoccupations about asthma were identified; however they were not intense enough to be considered as symptoms of any anxiety spectrum disorder.

CASE ANALYSIS 2

Name	:	Ms. K
Age	:	25 years
Sex	:	Female
Education	:	Post graduate
Occupation	:	Nil
Socio-economic status	:	Middle
Marital status	:	Unmarried
Family type	:	Nuclear
Duration of illness	:	Since childhood
Informant	:	Participant
Information	:	Reliable and adequate

History of illness and psycho-social functioning:

Ms. K is a 25 years old, unmarried female hailing from a middle socioeconomic family from Thrissur, Kerala. She was diagnosed with asthma at the

age of 5. The difficulties were predominantly related to breathing and coughing. At that time she had symptoms for at least 2 to 3 days per week and she was on continuous medications. Her activity level was very much restricted in such a way that she was not allowed to play like other children at school and neighbourhood. She was an average student at school. She was interested more in music and dance, and was an active participant in school youth festivals. Her parents used to tell her not to engage in plays which involve physical activities like running, jumping, etc. If she had gone for play she had breathing difficulties in the evening. The common triggers were dust and cold. She reported that she could clearly anticipate that the symptoms would be starting within a short period of time. So, she would start preparing some home remedies before the symptoms get worse. Her mother was very critical that she always attributed the disease towards the client's behaviour. So, in order to avoid blame and punishment, she used to make home remedies on her own. This pattern continued till she was around 14 years. According to the client, after her puberty, symptoms gradually became less frequent compared to childhood; however asthma lapses were present at least once in a month. She tried multiple treatment approaches like Allopathy, Ayurveda and Homeopathy expecting that something could cure it permanently. After that, when she joined college, there was an improvement in the illness, to the extent that asthma occurred only secondary to fever. If she had fever, cough accumulated which led to breathing difficulties. She managed to continue with this pattern of illness for the next two years. Still, during those times, the client could recall that on certain occasions she was able to feel the symptoms very slightly like breathlessness, after engaging in strenuous activities,

laughing, travelling to high altitude places, etc. She says that “there was always a background of breathlessness; I could hear wheezing sound deep inside”.

There is a strong family history of asthma from her paternal side. Her father was asthmatic since his childhood which affected his functioning to a great extent. Regarding the family dynamics, there were frequent fights between her mother and father, which put her in conflict and made her always feel that staying away from home is a better option than to stick back. Her mother was anxious about Ms K’s health so that she never assigned her household activities like cleaning, washing, etc.

Ms K’s her father had asthma and he had been on regular medication for quite a long time. According to her, he too is anxious about it and avoids lot of activities which require effort. Her father would use inhalers unnecessarily that he takes a dose even prior to slight gardening works, which in turn, is actually not recommended by his doctor. Watching her father, Ms. K had realized that certain fears were unnecessary and disproportionate. So, she had always tried to get herself rid of such a ‘sick role’.

For the last 6 months her asthma severity and intensity increased. During this time she went home after completing her studies. There was lot of stress at from the family as well as from academics. A huge pressure was there from the family for getting married, for which she was not prepared. Meanwhile, she also missed an opportunity for higher studies. Ms. K considered this period as one of the toughest in her entire life. During the last 2 months, illness became very severe that she even felt it almost similar to that of her childhood condition. She had asthma symptoms most of the days in a week and she had to be nebulised multiple times a week and

got injected for quick relief. Though she was recommended to continue medication for some more time, she is not compliant about it.

Ms. K mentions how asthma had affected her psychosocial functioning. She is interested in music and does stage programs. Now she takes extra care about her illness because she fears it would affect her programs. Accordingly, she had to restrict her food, and avoid travelling to high altitude places and even restraining from activities demanding physical effort. Though she loves to talk to others and laugh on jokes, her laughter often ends up in coughing and breathing difficulties.

Ms. K describes herself as a social, fun loving person who possesses good aesthetic sense and musical aptitude. She perceives herself as someone who jumps into decisions and who is impulsive. She is sensitive to emotions and she likes to experiment with new things in her life.

Mental status examination of Ms. K shows adequate functioning in the domain of thoughts, emotions, perception and cognitions.

Case Summary

Both the cases share a number of similarities in terms of age, gender, education, socioeconomic status and onset of symptoms. Ms. S and Ms. K experience similar pattern of symptoms predominantly breathing difficulty and wheezing followed by coughing and itchy throat. Triggers were mainly cold, rain and climate change. Both the participants have partly controlled asthma having occasional episodes and emergency visits. They report to have worsening of asthma symptoms secondary to stress. Avoidance behaviours, hyperventilation, safety

behaviours, cognitive distortions, emotional aspects relevant in asthma were elicited in both the participants, although the nature and intensity of which varies. Family dynamics revealed criticality and reinforcement of sick role as the major domains to be intervened. MSE of both the participants proves absence of psychopathologies, though preoccupations and anxiety regarding the illness was emerged.

Session notes

How the investigator implemented the mindfulness based asthma management programme (MBAMP) in terms of targets, techniques used, procedure and relevant events in the sessions are included in the session notes. Sessions addressing common issues and continuation of the previous one are written together, and responses of both the participants are presented together to avoid repetition.

Session 1

Before the 1st session itself, investigator could establish a good rapport with the participant thanks to the case history taking session. First session was aimed at shifting the medical model of asthma to bio-psycho-social model. Ms. S was asked to present her conceptualization about the illness. She had a very good understanding about the disease; however the basic physiology and phenotypes of asthma were not familiar for her.

Ms S*: "Well....I know that we feel breathing difficulty when our respiratory system is subjected to some kind of obstruction. I do not know why that happens, but in my case this happens whenever I am exposed to cold weather or rain."*

Investigator: *"Yes...You are right...and these obstructions acre caused due to multiple factors...As you said, it can be due to whether change, rain, physical exercise, etc.,"* Different phenotypes of asthma like cough variant, exercise induced, allergic asthma, etc. were explained in terms of difference in presentation and the common biological basis was highlighted.

While explaining about the mind-body relationship, participants could easily recall how they felt such a connection, in the past.

Ms. K : *"I understand what you are talking about. I have felt such a connection many times; it's like when we attend interviews we feel like cramps in the stomach, and many times I have felt like to go to toilet...all because of the tension."*

Investigator: *"Exactly...good example. I was intending to say that similar kind of mechanisms can happen in relation to the experience of asthma too. As you mentioned, tension can influence the onset, maintenance and even worsening of asthma symptoms. And it's not only simply 'tension' but behaviours, thoughts or the way you fee, etc., also can do the same, and this is what we are going to look at a bit more deeply. Then we will try to alter this."* Anchoring to this point, an orientation and socialization of mindfulness framework was given. Intervention programme was then initiated.

The term 'Mindfulness' was familiar to Ms. S as she had attended a class on Vipasana meditation a few years back. However, the concept was not understood well. So, 'Mindfulness' as a concept was explained to the participants. Difference between 'mindfulness' and 'mindlessness' was discussed, with daily life examples

like being ‘automatic’ on various tasks, and forgetting or missing day-to-day activities/things, etc. Mindfulness as an intervention, its application in other medical-psychological conditions, role of the therapist, and responsibilities of the clients were explained to the clients. Participants’ conceptualization was tested out by asking them to report back what they understood about it.

Ms. K : *“I think it’s like continuously being aware of ourselves...or focussing on present time...Right?”*

Ms S: *“As far as I understood, this is like concentrating on our self...and yah...as you said though we try to be aware of ourselves, we are taking a’ let it be’ kind of thinking style.”*

Investigator: “*Right...you are on the right path....can you please explain what you meant by ‘let it be’ kind of thinking style.”*

Ms S: *“Oh...ok...fine...I mean, I do not know how to frame it...but I think it’s like you are focussing on yourself but not immediately reacting to it...just leaving things as they are”*.

Necessary clarifications were provided highlighting key facets of mindfulness such as awareness, acceptance and non-judgmental and non reactive attitude, in order to get them prepared for body scan meditation.

Body scan meditation was introduced as a formal practice of mindfulness: a way to practice these aforementioned facets, using breathing as an anchor. For practice at home audio record of body scan script was provided, and they were asked to

practice on a daily basis. The investigator also enquired regarding the subjective experience of the body scan meditation.

Ms S: *"It was relaxing. However it took some time to complete...in between I got distracted and I had to try hard to focus on every body parts you mentioned...but I think while doing this, we become aware of many sensations, about which we were not, earlier*".

Ms K: "*Yaa...it was very soothing....I tried to relax while meditating."*

Asthma diary was introduced at this stage, which includes details about asthma experience such as date, time, trigger, severity, duration, subjective experience, thoughts that passed through their minds and coping strategies used. This dairy was to be used after each asthma attack the patients had, while they were on the course of this intervention programme.

Session 2 -3

Second session started with the review of body scan meditation and asthma diary. The contents of asthma diary were discussed with the participants to check the overall occurrence and subjective difficulties associated with it. Target of the second and third session was to address asthma specific maladaptive behaviour such as experiential avoidance, safety behaviours, hyperventilation and medicine dependence. This was initiated by enquiring the participant about what they do, in response to asthma.

Investigator: "Can *you tell me about the last asthma attack you had*?"

Ms. K : "*It was around one week ago... I had cough which ended up in asthma...I am currently not on regular medication. So, after some amount of time passed by, I had to run for an emergency visit in the nearby hospital*."

Investigator: "*Oh...Ok...You must had a difficult time...Right? Other than going for hospital, what else you do when you feel asthma related difficulties?"*

Ms. K : "*I go to hospital only when it is beyond the limit. Otherwise I try to take a deep breath and relax"*.

Investigator: "*Does that help you*?"

Ms. K : "*Not really...because even after taking deep breath the difficulties continue. But that is what I do most of the time*".

In that context client was educated about the counterproductive nature of hyperventilation and the vicious cycle it creates. Anxiety in response to hyperventilation is conceptualized as something that in turn increases the somatic difficulties further. This vicious cycle was explained with the help of a diagram, and the relevance of stopping hyperventilation was highlighted.

Investigator: "*As you have seen in the diagram, while you take deep breath as an attempt to control your symptoms, actually what happens is just the opposite. You would be experiencing more intense bodily sensations, due to anxiety. This is like a continuous cycle...means it goes around and around making the difficulties more and more intense.....does that make sense to you?"*

Ms. K : "*Hmm...Absolutely"*

Investigator: *"Is there anything you do as an attempt to prevent the occurrence of asthma symptoms?"*

Ms S: *"I keep a distance from strenuous works which would lead to asthma, and take care of my health, in terms of not having cold juices, ice cream, etc.,"*

Investigator: "*Can you explain, what you meant by strenuous works?"*

Ms S: *"I mean... tasks which require physical effort, or tasks leading me to sweat and palpitate. Actually I am scared of having the illness, so I do not do much of the household tasks...and my family knows about my condition, so they do not assign me that sort of things."*

Investigator: "*Doing household work has triggered asthma attack in you, right?"*

Ms S: "*No...I didn't say that it occurs every time after engaging in household tasks, it's just that as prevention I carefully undertake".*

Investigator*: "Then is it very necessary to avoid these activities and restrict yourself from every household tasks"?*

Ms S: "May not be....it's my fear that forces me to do so...but I feel helpless about it".

Investigator: "*I understand. Is there anything else you avoid to save yourself from having asthma attack?"*

Ms S: "*Yes...sometimes. I avoid travel. I mean long journeys...because I am scared that if something happens in between I would be trapped. And what if I am unable to*

get any medical help? If my family is with me I think I would be fine...otherwise it's a bit problematic for me."

From these conversations the counterproductive nature of avoidance and safety behaviours were explained, and the investigator encouraged them to slowly reduce and stop them. The concept of negative reinforcement, in terms of something which makes a behavior strong if we avoid it because of some anxiety associated with it, was explained. Ms. S was anxious about travelling without inhaler. Inhaler dependence was conceptualized as a kind of safety behaviour and this was addressed in the session. The elements of mindfulness such as continuous awareness of thoughts, body sensations and other psychological aspects were given emphasize during the session because these were the concepts to be noticed, from a patient-perspective, while dealing with safety behaviours. The application of body scan was emphasized along with this.

Investigator: "*You might have noticed that while practicing body scan meditation, you would be more aware of body sensations....and you also takes a mental position that you are accepting them as and how they are, and do not react to it. Right?"*

Ms S: "*Yes. I tried that...though initially I couldn't, I am trying to learn that skill"*.

Investigator: "*Ok.Very good...I appreciate your attempts. Can you now tell me how this skill would be helping you to deal with asthma?"*

Ms S: *"As you said I can be a little more aware of my body, but at the same time I am trying not to be too bothered about it. I won't say that I could achieve it completely, but I am trying for that 'let it be' attitude."*

Investigator: *"Very good. You got the concept. It is important to be mindful about you and not to be preoccupied with body sensations. But this is just not enough....as we have discussed, reducing and finally stopping those behaviours which you try avoid is also important. While reducing them, initially it is natural that you would be feeling insecure...but this insecurity feeling also needs to be mindfully observed and taken as a normal mental event, without reacting to its demands."*

Session ended up with emphasizing the need of writing asthma diary, experience related to mindfulness and generalizing the philosophy of mindfulness in to daily life activities. Gradual exposure to avoided activities was recommended as part of home works. While exposing themselves to such tasks, they were asked to focus attention on their body sensations (chest tightness) as well as towards various cognitions ("I can't handle this") emotions (anxiety, irritation) and urges (to give up the exposure). Participants were asked to begin with minimum anxiety-provoking stimulus.

At the end of the session, home works were given to practice and record the details of reduced avoidance and safety behaviours, in order to maximize generalization.

Session 4-5

Fourth session started with a discussion on asthma diary and experiences related to mindfulness practice. The target of 4th and 5th sessions was to address cognitive aspects of asthma. Since it is known that anticipation of asthma symptoms could, in fact, end up in the actual experience of symptoms, participants were encouraged to observe their thoughts on a moment to moment basis without being

preoccupied with it. As this would be difficult in the beginning, sitting meditation was introduced to help them acquire this skill. A discussion based on the premise "thoughts are not facts" was carried out, emphasizing the subjective nature of thoughts and the absence of objective counterparts to it.

Investigator: *"Now you have practiced sitting meditation. How did you feel"?*

Ms K: *"It was peaceful...though in between my mind wandered through some other things. I could observe myself. And when you told me to observe my thoughts, actually I didn't understand anything in the beginning. I was thinking what to think. Is that fine?"*

Investigator: *"That is absolutely fine, because you are observing whatever thoughts passing through your mind on a moment to moment basis... So, 'what to think' is also a piece of thought...and you are taking a non-judgmental attitude that there is nothing like good thought or bad thought...similar to that you breath or blink your eyes, thoughts also come and go, and you are observing them without being preoccupied with nor reacting to them."*

Ms. K : "*But what does this reacting to thoughts mean? And how does that worsen my problem"?*

Investigator: "*Good question...ohk..Let's see how it works. Just imagine that you are getting some messages from an unknown number. What would happen if you reply?"*

Ms. K : "*That unknown person might be sending messages again."*

Investigator: *"Right. Then what if we are not replying?"*

Ms. K : "*May be that person would try for some more time...and then again if we are not replaying he might slowly stop or try someone else"*

Investigator: "*True...The same example applies to us also in such a way that when we are getting emotional or preoccupied with the illness, our brain may send some false messages like ' you are not going to get better', 'I am going to be a chronic patient', etc. Trusting these thoughts and responding to it will in turn strengthen those thoughts and block you from healthy behaviors. Responding to it may take different forms like trusting those thoughts, taking a sick role, not taking medications, feeling upset, etc."*

Ms. K : "*Yaa... That makes sense...So we should not respond to those thoughts. Correct?"*

Investigator: "*Yes....and also take care not to avoid or control these thoughts, which are in fact same as responding to it. So it is good to observe and accept it as it is with a non-judgmental and non- reactive attitude. This may sound difficult in the beginning, but as you practice mindfulness, you can definitely do this."*

Cognitive errors also get framed in the similar way; so rather than restructuring or challenging them, being aware of these errors and accepting them with a mindful attitude is the better way of coping with them. Participants were instructed accordingly. It was emphasized that mindfulness shouldn't be limited to the practice of sitting meditation, but also needs to be generalized to daily life activities whenever possible. While practicing sitting meditation Ms. S had to stop

meditation in between as it was too difficult for her to be in a continuous attentive state.

Ms S: *"Sorry...I couldn't complete it. It was very difficult to be in a continuous attention state."*

Investigator: *"Do not worry...it happens. You are free to stop if it is overwhelming for you. Can you please tell me what actually made it difficult?"*

Ms S: *"I do not know exactly what the difficulty is. I felt restless...and an urge to stop it. I was not in a good mood today...that might have disturbed my peace of mind."*

Investigator encouraged her to talk about the difficulties she felt and tried to normalize it as a common response for people who do it for the first time. However, after a while she could do it completely.

Session 6-7

The session started with a review on sitting meditation, exposure tasks and asthma diary. Major target of 6^{th} and 7^{th} session was to find out how emotions influence asthma experience and to help the participants gain a better capacity about handling emotions. Participants were encouraged to see emotions as something impermanent. Every emotion does have an 'effective period' after which it starts to subside and eventually stops, irrespective of whether we have reacted to it or not. Participants were asked to recall whether stress has affected their illness in any manner.

Ms S: *"I have noticed many times that when I am happy, even if I am exposed to rain or cold weather, nothing would happen. Best example is that when I go for leisure trips with my friends, I never had any difficulty related to asthma."*

Ms. K : *"Definitely stress has always made it worse. I can remember one incident in which I had an argument with my roommate and both of us lost our temper...I cried a lot...That night I had asthma attack and had to go to hospital."*

Investigator: *"Ok...So it is very evident that emotions play a role in it. Isn't it? So it is relevant to manage emotions as part of asthma management."*

Ms. K : *"I agree."*

Mindful 'awareness' of emotional cues and being in the moment, were emphasized. Participants were asked to utilize the awareness components of mindfulness in such a way that it would help them in picking of first signs of emotional reactions before it get worse. Emotion management using mindfulness was focussed on non-judgmental acceptance of emotional waves. Importance of willingness to experience anxiety and negative emotions was discussed in the session. Metaphors like waves and clouds were used to enhance the clarity. Emotions predominant during asthma experiences found to be fear, anger and disappointment. Ms S: *"I get angry very easily when I am sick...I hate people talking to me."*

Ms. K : *"I feel disappointed...because despite of taking medicines and restricting me from lot of things I am having the disease again and again...and definitely another*

feeling is fear...Though I know that I would not die from asthma...at that time I feel really scared."

Investigator: *"Hmm...I understand. How do you come out of it?"*

Ms S: "I sit alone...or try to distract myself..I watch TV, lay down.....sometimes I through my anger to others."

Ms. K : "Nothing...these feelings go when my symptoms subside...I wait till then...sometimes cry a lot...but it made my breathing really bad...so I try to control my emotions within myself."

Investigator: *"Is it controlling or just suppression?"*

Ms. K : *"Yaa...must be suppression"*

As practice she was asked to find an emotion that she felt in the current moment, and to visualize the event with details like where she was, what was happening, what he said, how he felt, etc. Once the emotion is clearly recognized, client was encouraged to describe to the self about the changes in quality, intensity and type of emotion they were feeling. It is continued until there is a significant change in quality, and they have the sense of wave effect of their emotions. Maladaptive elements of emotion suppression were discussed and how managing emotions would tend to help dealing with asthma was emphasized.

Session 8

As previous sessions, eighth session began with the review of meditation, asthma diaries and home works. Participants were appreciated and given

responsibility for the improvements they have reported. The target set for the session was to enhance problem solving and coping skills, which would interfere with asthma prognosis. Participants were enquired about the way they address various problems and stressful events in their daily life.

Ms S: *"Actually it depends on the situation...Sometimes I react to it, sometimes I just keep silence or cry...There are situations in which I jumped in to certain solutions and ended up in worsening the problems at hand."*

Investigator: *"Have you tried to improve your way of approach to these kinds of issues?"*

Ms S: *"I tried in my own ways.....But I couldn't find out an 'Ultimate' method to solve* problems."

In that context, different steps through which problems can be solved were discussed. To verify participant understands and to maximize generalization a number of hypothetical problem situations were discussed.

Investigator: *"Alright...so this is how you would have solved if you were at this situation. Now can you think about how to approach the same problem in a different way, like what else you would have done?"*

Ms K: *"I might have talked to some one nearby that I do not feel good and ask for help...but I do not know whether that works."*

Investigator: *"I think now it would be good if you try to generate a number of possibilities than immediately checking its potential efficacy. Can you try more options?"*

Ms K: *"Oh...Ok...fine...then.....I can sit calm and wait for sometime...or I can find out a hospital near by.....or I may....."*

Participants were asked recall how they have responded to stressful events in their past. Different coping strategies were elaborated and find out what all they have frequently used. The counterproductive nature of maladaptive coping styles was emphasized. Coping strategies specific to asthma were given priority. Problem focussed coping strategies were compared with emotion focussed coping strategies, client was asked to weigh the advantages and disadvantages of both, and encouraged to try problem focussed coping styles when they are under stress.

Session 9

The 9th session was targeted at addressing familial factors contributing to the maintenance of asthma. Family members of the participants were included in the session. Family dynamics was explored to see whether the signs of contingencies maintaining the behavior, over protection or blame exist. Investigator: *"How do you respond when she is having asthma related difficulties?"*

Ms K's parents: *"We take care of her...We prepare some home remedies like and give her...tell her to take rest. If it is severe we bring her to hospital. She has these difficulties from the beginning, so it's not new to us...We know how to handle."*

Investigator: *"Does she have to follow any restrictions because of her illness?"*

Ms K's parents: *"Not restrictions....but we always tell her to keep away from dust, cold etc., when she was a child we didn't allow her to go for tour programs or long journeys...Even participating in games were not allowed... Now she is grown up and capable of take cares of her...still I do not assign much of kitchen works to her, because there will be lot of smoke and strong smells".*

The family of Ms. K seems to have a realistic picture about asthma, and there was no indication of over protectiveness or blame. Family members were discussed about the importance of exposures to the daily life activities she has been avoided. From an ethical side, family was instructed to discuss with the pulmonologist they have been consulting about the exposure tasks to make sure that it doesn't have any triggers in her case.

Investigator: "*Hope you got my point. You try to include her in the house hold work. It would be good, if you can start from small things you haven't assigned yet and slowly go ahead to takes requiring more effort...Rather than assigning works, you can request her to help you out or work together to make it enjoyable."*

Ms K's parents: *"We know it is required...She would be getting married within a couple of years, and she is not supposed to take a 'sick role' over there. But the only thing is that we are little worried about having the disturbances when she starts trying something new."*

Investigator: *" I understand your anxiety, and it is natural too...these concerns will subside only when she engages in the tasks we have suggested...as per your report house hold works never triggered asthma in her...It was always cold, and weather*

changes caused the symptoms. So as per history it won't be a triggering factor. As I have mentioned you can discuss with your pulmonologists about it before you start. Does that sound relaxing?"

Ms K's parents: *"Yes...very much."*

Ms S's parents: "*There is no point in telling her, she would always do whatever she feels. If she is having asthma she is the only one responsible for it."*

Investigator: *"Can you please make it clear by explaining what you meant by 'she is responsible'?"*

Ms K's parents: "*We mean...she is not taking care of her health that is why she is having frequent episodes. She is not a boy, so it's not a big thing for her to sit at home like other girls."*

Family was asked to generate other possible triggers of asthma and encouraged to think that the Ms. K as a person is not the sole reason for her difficulties. Cohesion within family and healthy conflict resolution was encouraged rather than blame and criticality. The session was focussed primarily on maximizing the involvement in daily life activities, and to reduce unnecessary restrictions which would facilitate a 'sick role' in the participant. Reduction of criticality was also aimed in the 9th session. Family's role in it as a catalyst and supporting system was educated to immediate family members.

Session 10

The final session was aimed at reviewing previous sessions and overall experience related to the intervention program. Though all the identified targets were addressed, participants were asked to open up, in case they felt anything relevant needed to be discussed or intervened about. They were encouraged to talk about the subjective experience they had while undergoing the intervention, in terms of perceived outcomes, difficulties, process of change, asthma experiences, etc. Treatment adherence was highlighted in this concluding session.

Investigator: *"As we have planned, we might be winding up the sessions today, but that doesn't mean that you stop practicing the skills you acquired from the intervention. It is a continuous process....and now you are better aware of various elements in your behaviour and thoughts affecting your experiences with Asthma. So I hope it would help you in future. Right?"*

Ms. S: *"Definitely...I realize that it is a continuous process. I will have to utilize and practice whatever we have discussed in the previous sessions. May be, whatever I have gained from these sessions would be helping me, in direct and indirect ways, when I deal with an asthma attack in future."*

Investigator: *"Yes...I think you would definitely be managing it in a better manner...and in case if you feel fumbled, you can come and meet me anytime, and from your words it seems you have a realistic concept about asthma that lapses can be occurred."*

Ms S: "I know that it has a chronic nature...it might occur again...I accept it, but I feel this time I am prepared to handle it."

Investigator: *"Oh...that's great. It is very important to have this kind of an attitude towards a disease. You said you are prepared to handle it, can you explain it further?"*

Ms S: "I mean this time I would be able to pick up the changes in my body quickly before it gets worse, and I will try to take it mindfully than getting panic."

Investigator: *"Very good. I hope being mindful would help you to differentiate between actual versus anxiety induced changes in body too. Another thing is that as I have mentioned in the beginning, this intervention is not a substitution for medical treatment. So if you have severe difficulties do not hesitate to meet your pulmonologist."*

Ms S: *"Sure...I understand"*.

Application of mindfulness as a philosophy in daily life (beyond Asthma) was emphasized in terms of being able to pay attention to one's inner experiences with a non-judgmental and non-reactive stand. Relapse management was another matter addressed in the final session. Participant was indicated that relapses of thoughts, safety behaviours and anxiety secondary to them are normal, and to be mindfully accepted and practice of mindfulness as a skill would help them to deal with the lapses more easily, as it would help them to observe the changes as they appear, accept non-judgmentally and cope with them in adaptive ways.

At the end of the session participants were asked to give their rating again on the visual analogue scale. They were thanked for being a part of the study and they. One month after the termination of the MBAMP program, participants were asked to write a self report about the therapeutic experience and feedback, which includes overall experience of the intervention, perceived outcomes, process of change and difficulties they had.

Analysis of Visual Analogue Scale Ratings

Table 3.17: *Rating of the participants on various dimensions using the Visual Analogue Scale*

Dimensions	Rating by participants			
	1st session		10th session	
	Ms S	Ms K	Ms S	Ms K
Knowledge about asthma	3	2	9	8
Reduction in avoidance behaviours	1	1	8	7
Management of asthma related thoughts	2	1	9	8
Awareness of body sensation	3	2	8	8
Management of emotions	2	1	8	7
Skills of problem solving in daily life	3	3	7	7
Interaction with family	4	5	7	6
Sense of control over asthma	3	2	9	9
Mindfulness skills	2	1	8	8

From the table: 2.17, it is evident that there is difference in the perceived attainment of the target domains before and after the intervention, for both the participants. Greatest difference was observed on the management of thoughts, sense of control over the disease, reduction in avoidance behaviours and the mindfulness skills. The least difference was observed in the family interaction domain. This

might be because of the reason that both the participants were staying away from home so that family influences kept themselves low, throughout the intervention.

Analysis of the self report

The responses of the self report can be organized under four themes, such as overall experience of the intervention, perceived outcomes, difficulties they felt and the assumed process of change. Details of each area are given below.

Table 3.18: *Reponses of the participants in the self report after undergoing the clinical trial run of MBAMP*

Themes	Responses
Experience of mindfulness	• It was a kind of relaxation • Calming • Positive experience
Perceived outcomes	• Become more aware of myself • Not much worried about asthma • Reduced avoidance to great extend • Feeling that I can do something about my illness • Breathing is relatively more easy when experiencing asthma • Improvement in head ache after meditation • Can lay down, and sleep even during asthma episodes
Process of change	• Through reducing tension • Not always thinking about breathing • May be I am ready to try out things which I avoided • Changes my knowledge about asthma
Difficulties	• Time consuming • Initial difficulty of mindfulness practice • Could not practice on some days • Difficult to keep attending for long time

Participants reported that undergoing mindfulness training has been a calming experience for them; they could experience it as very positive and relaxing. They described that they could become more aware themselves as a result of mindfulness. Reduced worrying and decreased avoidance behaviour were also reported. One of the participants reported that now a days she climb steps and walk like others even during asthma experience, which she never tried out earlier due to the fear of breathlessness. After initiating such activities, she reported to have some sense of control over her illness. The awareness and non judgemental acceptance of one's experiences on a moment to moment basis works as a protective factor against various forms of psychological distress such as, fear, anxiety, worry, preoccupation, rumination, etc. One of the proposed mechanisms behind it is that people practicing mindfulness have reduced tendencies to suppress, avoid or over indulge with one's distressing thoughts and emotional experiences (Feldman & Hayes, 2004).

Participants felt they had better control over the disease after practising mindfulness. Their account of statements regarding this included some objective measures such as decreased head ache, less frequent breathing difficulties, etc. One of the participants reported that she had a good improvement of head ache that used to occur so frequently earlier. Empirical evidences are available in support of these statements. For instance, Bakhshani, Amirani, Amirifard and Shahrakipoor (2015) have found that mindfulness based stress reduction programme is effective in reducing migraine and chronic tension type head ache. One of the process reported behind this is that mindfulness work as an antidote for pain catastrophizing, so that

those who practice mindfulness become more open to experiences of pain without indulge in them (Schutze, Rees, Preece & Schutze, 2010).

Similarly, participants also reported that they often fell asleep while doing mindfulness. They mark this as a very positive because it was earlier difficult for them to even lie down during an Asthma episode. So, falling asleep during such as episode was immensely relaxing and confidence-building for them. There have been a number of researchers on how meta-cognitive elements affect sleep quality. It was found that while having physical discomforts, people tend to have explicit intensions and efforts to sleep. This in turn leads to failure to de-arouse one self, which is essential for falling asleep. Taking a non-judgmental stand helps to deal with this meta-cognitive aspects and facilitate falling asleep (Ong, Ulmer & Manber, 2012).

According to the participants, the MBAMP could bring about changes in their perception and experience of the disease through various means. Primarily through reducing tension and changing their knowledge about Asthma, it could activate a process of change. Asthma is no longer understood in the similar way as earlier, rather it has now been reframed to a more controllable and less-preoccupying condition. This is in line with the core feature of mindfulness that, it helps people to take a ‘let it be’ stand- an extension of non-judgmental acceptance on various experience despite of having different valences associated with it. This would counteract with preoccupation and make people less worried about experiences.

The participants now think about their breathing and breathing issues less frequently than before. It is not surprising that practicing mindfulness reduced

breathing related difficulties, because breathing is the core element of mindfulness training, based on which the facets of mindfulness is anchored. Malpass, Feder and Dodd (2018) reported that being mindful encourages, observing sensory experiences associated with breathing in ways not explored before. And, practicing mindfulness has enabled them to try out things that they were previously avoiding. For this shift, in particular, defines the essence of mindfulness training. Being willing to confront stimuli and experiences is one of the proposed mechanism of change in various medical and psychiatric conditions, after practicing mindfulness (Branstorm, Kvillemo, Brandber & Moskowitz, 2010).

Participants also reported some difficulties regarding the practice of mindfulness. Long duration of the sessions is the major problem reported. Since the MBAMP requires more than half an hour to complete one session, participants reported that it's difficult for them to keep attending for such a long time. Not only mental fatigue but physical fatigue also was reported. Similarly, the content-similarity between the two forms of mindfulness practice, namely sitting meditation and body scan, made them to feel a little bored during the practice.

Participants also reported that it was difficult for them to practice mindfulness, especially during the initial phase, because they were very fresh to such kind of a mental exercise. The difficulties include physical discomforts (fatigue) as well as initial challenges associated with sustaining attention for long time. Also, they were unable to practise mindfulness on a regular basis since it required some amount of exclusively dedicated time. This was not exclusive to the participants of the current study, but these kinds of difficulties are common with

beginners of mindfulness practice. Tiredness, boring, repetition, not being fully involved is the most common challenges reported by people practicing mindfulness However, it was worth noting such difficulties are not an indication that meditation is going wrong, but it is fundamental and unavoidable while engaging with difficult experiences, thoughts and emotions (Kerr, Josyula & Littenberg, 2011).

Along with this, their asthma diary was also subjected to a primary analysis. Though asthma diary was prescribed for enhancing their self monitoring skills, researcher has done a primary analysis of it, to understand the nature asthma symptoms during the course of intervention. Participants were asked to write about the number of days they experienced asthma related symptoms, it's severity in terms of whether it was mild, or moderate or severe, and impact on daily life functioning.

Ms.S reported that she experienced asthma symptoms on 21 days, during the entire course of the MBAMP which lasted for approximately 3 months. In the case of Ms. K this was 14 days. Although both of them didn't feel a significant decrease in the frequency of episodes, the subjective distress and severity of symptoms reported to be decreased. For example Ms.S reported that she could manage her everyday activities even when there was asthma. Both of them were saved from taking leaves from their work, which they perceive as a positive indicator about less asthma-affected daily functioning.

Fine tuning of the intervention

Based on the feedback given by experts after validation process as well as the analysis of self report provided by the participants who have undergone

MBAMP, a fine tuning of the intervention was made. Fine tuning refers to making necessary changes and corrections in the designed intervention, to make it more adaptive and efficient. In fact, essential content-related modifications were derived-neither from expert validation nor from participants' feedback. Instead suggestions were received with respect to making the intervention more context-specific and flexible, which were as follows:

- Number of sessions can be varied, without affecting the total conceptual framework of the intervention, when there are newer factors to be intervened or when any of the existing factors mentioned in the intervention programme seems to be irrelevant with respect to a particular client.

- Necessary modifications can be made to make the intervention fit with the nature and intensity of client's difficulties.

- If the client is showing difficulties predominantly in one or two domains, relative importance can be given and correspondingly weighted time can be spent on these dimensions.

- Involving family is not mandatory, as this may not be applicable in all cases. Since the clients belong to adult population and so may not necessarily be staying with their families, family factors have nothing to do with the Asthma conditions/symptoms. So, in such cases, sessions involving family members would be meaningless.

Researcher's reflections

After the termination of the MBAMP a process evaluation was done by the researcher about various aspect of the delivery of the intervention such as the experience of the researcher, changes in the plan of delivery of the intervention and factors that played as facilitators as well as barriers.

Experience of participants and researcher: As provided in the feedback, the participants reported a number of perceived benefits, such as become more aware of oneself, less preoccupied with asthma, a sense of self efficacy and improvement of headache. According to the researcher, clinical trial run of the MBAMP helped to realize the gap between designing and delivering of the intervention. It also helped to get insights about the strong and weak aspects of the structure and delivery of the intervention. The strong aspect is the sound theoretical back up of each components being included in it, and the matching of the various components with the phenomenology of asthma. The weak aspects are its length and time required to complete 10 sessions. As one of the participants reported sticking on an intervention for around 2 months might be a challenge for the participants.

Fidelity: Fidelity refers to the deviations of plans of delivery of the intervention. The MBAMP was delivered as planned for both the participants. All the components were implemented in the pre fixed manner. The major concern was the change of schedule of sessions. A number of sessions were re-scheduled due to the participant's inconvenience. The researcher had to remind the participants multiple times to attend the sessions on time.

Facilitators and barriers: A number of internal and external facilitators and barriers affected the delivery of MBAMP in a number of ways. One of the potential facilitators was cooperative attitude of the participants. Both the participants had an intrinsic need to be part of the MBAMP. They were willing to cooperate with the intervention components and had a meta-cognitive attitude that was essential for mindfulness based interventions. The Pulmonologist with whom researcher had discussions about some of the components of the interventions was, really helpful and had a multi-disciplinary approach to asthma management. She referred a number of potential candidates to the researcher. Some foreseen major barriers affected the structure and delivery of the intervention was the flood happened in Kerala, in the month of august 2019. As the participants could not travel due to flood related issues, intervention had to be paused for few days. An unplanned break had happened, so that orienting them back to the intervention and connecting with previous session was a challenge. Making them adherent on home works was another barrier. Though the participants were motivated to undergo the intervention, they were not regular on reporting their experience on a daily basis as part of home works. Researcher had to remind them about the relevance of recording personal experiences related to the intervention and asthma symptoms.

CHAPTER SUMMARY

This chapter dealt with the analysis and inferences from various phases of the study. Pilot phase of the study included analysis of related literatures and expert interview with Pulmonologists. This showed how various psychological factors affect the experience and expression of asthma. Main phase of the study was

conducted in 3 sub phases. Analysis of the main phase 1 includes various themes emerged from the interview with patients diagnosed with asthma. All the themes emerged, such as conceptualization of disease, cognitive factors, behavioural factors, emotional factors, familial factors, attitude towards treatment and asthma related self efficacy, represented different areas to be intervened as part of a comprehensive asthma management programme (MBAMP). In the phase 2 of the main phase, a mindfulness based asthma management programme was designed. Data from three sources, such as (a) common techniques used to address similar symptoms/disorders, (b) perspectives from the FGD and (c) analysis of empirical works and theoretical models on asthma management, were subjected to triangulation. Based on this, final contents for the MBAMP were selected. The developed MBAMP consists of 10 sessions incorporating strategies from various therapeutic models. However, the major frame of the intervention was determined by mindfulness. It was subjected to expert validation before implementing. In the phase 3, as a clinical trial run for understanding the feasibility and practicability of the MBAMP, the proposed intervention was implemented on 2 participants diagnosed with asthma. A detailed case analysis was done before beginning the intervention. Session notes were provided with verbatim examples to enhance the clarity of the delivery of the intervention components. Following this phase, the chapter presents the analysis of the visual analogue scale, self reports and asthma diary of the participants, further followed by the fine tuning of the intervention and researcher's process evaluation.

CHAPTER IV

SUMMARY AND CONCLUSION

Asthma is a common condition characterized by reversible airflow obstruction, airway inflammation, and increased bronchial responsiveness to a variety of stimuli, ranging from allergens and other irritants to strong emotions (National Heart Lung & Blood Institute, 1997). Psychosocial factors contribute to prevalence and mortality associated with asthma directly as well as indirectly. Mere biological models are insufficient as an explanation to the onset, exacerbation and maintenance of asthma symptoms (Wright, Rodriguez & Cohen, 1998). Different perspectives exist, as explanatory models for asthma, like psycho-analytic, behavioristic, cognitive-behavioristic and family system theories. A number of psychological issues can produce respiratory manifestations, which makes it difficult to make the distinction between these two and to reach to a diagnosis (Labolt, Preisman, Torosian, Popvich & Iannuzzi, 1996; Labolt & Innuzzi, 1995). Higher rates of psychiatric disorders have been reports in people with asthma. Almost two third of asthma patients reported to have life time history of at least one psychiatric disorder in which around 40% and 10% of patients had histories of panic disorder and depression, respectively (Afari, Schmaling, Barnhart, Buchwald, 2001). Asthma, being a multi-factorial chronic disease having psychological and psychiatric co-morbidities, demands for more integrated management approaches (Boulet, 2009).

NEED AND SIGNIFICANCE OF THE STUDY

Compared to many other medical conditions, Asthma is a disease which is understood better in terms its psychological instrumentality. Most clinicians,

including pulmonologists, acknowledge that the disease is often caused, triggered, and/or maintained by psychological factors.

A large body of research exists in this area and an even larger amount of interest is on the go. Most of the studies conducted on Asthma are aimed at addressing the psychological variables related to the disease, within the conventional framework of clinical psychology. Generally, these topics range from application of psychological principles in asthma treatment adherence, asthma co-morbid to other psychological disorders such as depression and phobias, reduction of anxiety related to asthma, to relaxation techniques most effective for asthma and so on. There is hardly any study trying to integrate the entire psychological experience related to the disorder. Similarly, an Asthma management programme which covers every known psychological domain is also difficult to come across.

The present study is an attempt to compensate for this gap in this area of research. It is a systematic exploration of psychological correlates with an aim of developing a comprehensive (than limiting to one or two domains) Asthma management program.

More importantly, researches in this area are by and large quantitative in nature. The present study therefore uses purely qualitative measures to attain its specified objectives. Only such a design, which analyses the subjects' own narratives and explanations regarding their experience with the disease, would enable the researcher to understand the cognitive, behavioural, emotional and other related psychosocial factors involved in Asthma, the information regarding which is inevitable for the purpose of present research.

RESEARCH AIM/ STATEMENT OF THE PROBLEM

The aim of the study is to explore the psychological correlates affecting the experience and expression of symptoms in patients' diagnosed with asthma and to design a comprehensive asthma management program, and to implement the proposed intervention on patients diagnosed with asthma for fine tuning of the intervention.

The current study is titled as "EXPLORATION OF PSYCHOLOGICAL CORRELATES OF ASTHMA AND DEVELOPMENT OF A MINDFULNESS BASED ASTHMA MANAGEMENT PROGRAMME"

WORKING DEFINITIONS

Asthma: Asthma is a common condition characterized by reversible airflow obstruction, airway inflammation, and increased bronchial responsiveness to a variety of stimuli, ranging from allergens and other irritants to strong emotions (National Heart Lung & Blood Institute, 1997).

Mindfulness: Mindfulness is a practice of paying attention in a particular way: on purpose, in the present moment and non-judgmentally, as defined by Kabat-Zinn (2001).

Asthma Management Programme: An intervention programme designed to address the cognitive, emotional, behavioural and familial factors related to Asthma with an aim of enabling the individual to better manage the condition.

Exploration: Exploration refers to the attempt to discover the psychological correlates of Asthma by means of analyzing the semi-structured interviews conducted with Asthma patients

Psychological correlates: Psychological correlates are defined in the context of the present study as those psychological variables that, along with other contributory factors, cause the condition of Asthma to increase in its severity, to remain longer in its symptomatic expression, or to trigger the onset of an episode.

RESERCH OBJECTIVES

1. To explore the psychological correlates of asthma
2. To develop mindfulness based asthma management programme
3. To run a clinical trial of the proposed mindfulness based asthma management programme for fine tuning of the intervention.

RESEARCH QUESTION

The key research question is formulated as “How can the psychological correlates of Asthma be addressed through developing an intervention based on mindfulness?” Based on this, sub questions were also formulated such as:

1. What are the psychological correlates of Asthma?
2. How can a mindfulness based management programme to address these correlates be developed?
3. How can it be validated and fine tuned?

INFERENCES

Current study adopts a multi-method qualitative research design, as it incorporates a number of different qualitative methods to address the objectives spread across different phases of the research. Method of the study can be elaborated under two broad phases, a pilot phase and a main phase. Each phase differs in terms of objectives, designs and measures used and the way it has been carried out. Each phase contributed to the planning and procedure for the forthcoming phases.

Pilot phase

The purpose of the pilot phase was to make all the necessary background preparation for the various phases of the main study. Pilot phase started with getting familiar with the psychological variable in the context of asthma. An extensive analysis of previous studies was done. An unstructured interview was conducted with Pulmonologists for gaining their perspectives on the psychological factors involved in Asthma.

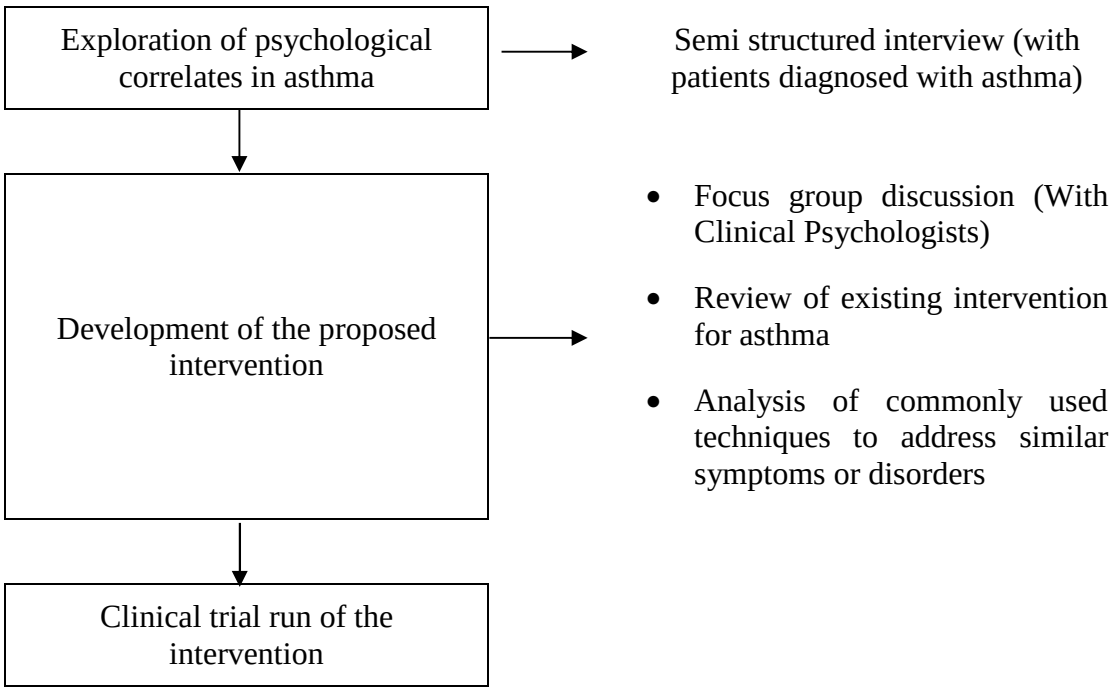
The following variables were identified from the pilot phase; i.e., after exploring the psychological correlates in asthma from the review analysis and expert interview: health related quality of life, stress and asthma symptoms, believes about asthma symptoms, subjective symptom perception, emotion and asthma, treatment adherence in asthma, familial factors, psychological risk factors, psychiatric co-morbidities and psycho-social interventions in asthma. Expert interview provided additional information about the psychological factors manifested in asthma case presentations and also about the need and relevance of addressing them as part of a

comprehensive asthma management program. Based on these sources of data a schedule for semi structured interview was prepared.

Main phase

The main phase was conducted in a sequential manner. It was further divided into three phases, as Phase 1: Exploratory phase, Phase 2: Intervention development phase, and Phase 3: clinical trial run phase.

Figure 4.2: Overall design of the main phase with its sub phases



Main phase 1

The main phase 1 was concerned with the exploration of psychological correlates of asthma in the selected sample, using the actual administration of the interview schedule and carrying out data analysis. 36 persons with the primary diagnosis of asthma were selected through convenient sampling for the interview,

who met the inclusion criteria for the study. Pulmonologists first evaluated each patient and then referred to the researcher those who met the inclusion criteria. Asthma diagnosis was done on the basis of GINA guidelines, 2018, and all variants of asthma have been included for interview. Recorded data were transcribed in to verbatim and thematic analysis was done. The main themes emerged from the analysis were conceptualization of illness, cognitive factors, behavioural factors, emotional factors, familial factors, attitude towards treatment, asthma related self efficacy and self concept.

- Conceptualization refers to how people with Asthma understand about their medical conditions and attributions they make about it. From the present study it was found that majority of the participants do not have a clear understanding of the disease. They have misconception about asthma, as they perceive it as 'disease of breathing' or 'disease of coughing. Ignorance of the heterogeneity of asthma symptoms has been reported, which is more common in people with such phenotypes of asthma where breathing difficulty is not prominent (E.g.; cough variant or occupational asthma). So these people have difficulty in accepting their difficulties as being 'asthma'. Lack of awareness about the variation in timing and intensity of symptoms also contributes to the uncertainty. Their attribution of illness varies from functional impairment of the heart to that of the lungs or the nervous system.

- Cognitive factors represent the thoughts, beliefs and perceptions people form on the basis of their experience with asthma**.** 'Fear of death' was the most prominent cognition associated with asthma. Uncertainty and

unpredictability about the disease is another prominent factor noted down. Here uncertainties were regarding 'what the illness is', 'heterogeneity of symptoms', 'intermittent nature of symptoms, etc. Cognitive errors such as labelling ("am I a chronic patient"?) and catastrophization ("I think it is going to become a full blown breathlessness") lead to exaggerated symptom perception. Anticipation of symptoms was another subtheme emerged under cognitive factors.

- Behavioural factors represent what people actually do in response to their symptoms as well as other behaviours or actions performed in relation with asthma. The most notable behavior associated with asthma is avoidance. Most frequently reported avoidance is of physical activities, house hold work, laughing and social interactions. Avoidance of social interactions was seen only in cough variant asthma, since coughing in public is something that is easily noticeable to others and might result in embarrassment. Safety behaviors were commonly reported by many of the participants, with the explanation that it reduces their tension associated with the disturbances. Safety behavior associated with inhaler use was also seen. In a similar line, in the current study participants have reported that they tend to hyperventilate with the expectation that 'deep breathing' might help to resolve suffocation. Persons with family history of asthma were found to have a sick role model.

- Emotional factors represent the feeling or affective component experienced and expressed by people with asthma in response to the condition. 90% of

the participants report that stress has a role in exacerbation and experience of asthma symptoms. The most frequently reported stress was in the area of family, such as conflicts between children, marital issues and adjustment problems with in-laws. Anxiety and low mood are the dominant emotions emerged through data analysis. These emotions were frequently associated with the uncertainty about the next episode, which itself is a cognitive factor. Hopelessness and helplessness were also seen. Anger was another notable emotion that participants experience during asthma attack, which is often associated with the frustration of being unable to communicate the difficulties with others.

- The theme ‘familial factors’ is about a wide range of dynamics or pattern of interaction between a patient with asthma and his or her significant family members. Though majority of the participants were found to have a good family support, a few of them had experienced blame from the family members for having an illness. Perceived burden is another notable factor. Contrary to this, elements of over protection and secondary gain were also observed in some participants.

- Attitude towards treatment is a multidimensional construct encompassing cognitive, behavioural and emotional elements one has about the treatment he or she is receiving. Dependence on inhaler was one of the most prominent factors identified. Poor adherence to treatment was also found which is closely linked with the fear of side effects of medicines. In a similar line trying out alternative treatment options was also found. This is often

associated with the 'unpredictability" of asthma. Financial burden was reported as a barrier for treatment in some of the participants, which was seen only in patients with uncontrolled asthma.

- The theme ‘asthma related self efficacy’ is about the beliefs patients with asthma has about how well and effectively one is able to perform certain behaviours related to their disease. 'Lack of control over the illness' was one of the major factors emerged from the analysis. This is indicative of their self efficacy specific to asthma.

- When they have been asked about how they would describe about themselves the most common themes emerged are 'sensitivity to emotions' and 'poor frustration tolerance. Ninety five percentage of the participants described themselves as emotional, sensitive in nature and several participants reported of being 'less expressive'.

To minimize the subjectivity in analysis and selection of codes, inter-rater coding was adopted. The themes that emerged were identified as the target areas to be addressed in the intervention module.

Main phase 2

For addressing these themes a comprehensive mindfulness based asthma management programme was developed in the 2nd phase of the main study. Review analysis and a focus group discussion were used as methods here. To make the intervention valid and to reduce subjectivity data from 3 sources have been triangulated, such as through the analysis of commonly used techniques to address

similar symptoms or disorders, analysis of existing intervention for asthma and psychological models behind various techniques, and the inferences from the focus group discussion. Then, a draft of mindfulness based asthma management programme has been prepared. At first, researcher went through the theories proposed and empirical works conducted to address these factors or factors similar to this. The rationale was that the themes emerged from the exploratory study was common in some of the psychopathologies like anxiety spectrum disorders and mood disorders. How these factors been addressed in those conditions were extensively reviewed. Text books on psychotherapies and empirical studies on the management of various neurotic disorders were kept as background, and on the basis of this, researcher identified a few techniques to be adapted to the proposed intervention for asthma. The identified potential contents from this are mindfulness, Education, exposures, self monitoring, altering of coping skills strategies and systemic approaches. It was also decided that rather than limiting to a single psychotherapy model, techniques from different therapeutic frameworks can be used.

After analysing the existing interventions for asthma, it was found that most extensively used intervention frameworks for the management of asthma are educational, behavioural and cognitive-behavioural. Behavioural interventions are most frequently reported in empirical studies and literature, and the techniques are, stimulus control, relaxation, breathing exercises, education programs, biofeedback and related self regulatory techniques and cognitive restructuring. Principle of classical and operant conditioning as well as cognitive theories is the theoretical

models explaining the phenomenon of asthma. On the basis of this, the techniques most suitable for addressing the factors to be included were carefully selected.

A focus group discussion was done as a second source of data for triangulation. Participants of the focus group discussion consist of 8 clinical psychologists, selected through convenient sampling, who had minimum of 4 years of clinical experience in dealing with wide variety of psychopathologies. The discussion was based on the focus group schedule which covers the felt needs of a psychological intervention, frame work of intervention, suggested contents to address the identified psychological correlates, etc. Content analysis was used to get the essence of the focussed group discussion.

- Felt needs reported in FGD are, to enhance the acceptance of the disease, to reduce secondary frustrations, to enhance coping strategies, to reduce comparison, to reduce distress associated with a chronic illness.

- Factors that might influence the receptivity of the interventions are motivation and willingness to participate, stigma about psychological intervention, over-reliance on pharmacotherapy, and underestimation of psychological moderators.

- Awareness building reduced number of sessions, not overemphasizing psychological factors, bringing in the pulmonologist and provision of room for related discussions were suggested to enhance the receptivity of the intervention.

- The assumed potential benefits were better prognosis, well being, and improved acceptance, enhanced compliance to treatment, reduction of frustration, better management of emotions and reduction of asthma maintaining behaviours.

- Potential contents suggested were asthma education, awareness building, using check list of phenotypes, mind body relationship orientation (for addressing conceptualization), challenging maladaptive thinking, acceptance enhancing strategies, mindful awareness of symptoms, evidence gathering, relaxation (for addressing cognitive factors), exposure to avoided cues, mindfulness integrated exposure, behavioral experiments, education, family involvement, awareness facet of mindfulness, acceptance facet of mindfulness (for addressing behavioural factors) , awareness of the role of emotion on symptoms, enhancement of coping strategies, mindfulness based acceptance and non reactivity, engagement in positive emotion generating activities (for addressing emotional factors), solution focussed approaches, evidence gathering, daily monitoring of symptoms, managing relapse , problem solving skill training (for addressing self efficacy), keeping log diary and connecting it with the socio-occupational dysfunction, daily monitoring of symptoms, motivational interview, psycho-education on secondary impairments (attitude to treatment), family involvement in sessions, to educate about secondary gains, criticisms and over involvement, and also to involve family member as co-therapist for adolescents clients (for addressing familial factors) .

The formal training and clinical experience of the researcher regarding psychopathology case formulation and application of psychotherapies from different theoretical perspectives facilitated intervention designing. Then the initial draft of the intervention was designed after triangulating the data from all the sources mentioned above.

To ensure the validity of the designed intervention, a check list of criteria for the evaluation of intervention was developed by the researcher after discussing with the supervisor based on CReDECI 2 (Criteria for Reporting the Development and Evaluation of Complex Interventions in healthcare: revised guideline, 2012) and TIDieR (Template for Intervention Description and Replication, 2014).This draft was given for clinical psychologists for expert validation, and based on which necessary modifications were made.

The proposed Mindfulness Based Asthma Management Programme comprises of 10 session, incorporating techniques from different theoretical and therapeutic perspectives. Although, the global framework of the intervention is determined by mindfulness. Duration of each session was fixed to be one hour. Major components of the intervention are: Psycho-education, socialization of mindfulness framework, gradual and mindfulness integrated exposure, being in the moment, re-conceptualization of thoughts, behavioural experiments, sitting meditation, body scan meditation, problem solving and coping strategies, family education, home works and dealing with relapses.

Rationale for using these components were reported by giving an account of the following theoretical models; Theory of mindfulness, bio-psychosocial model

,operant conditioning (principles of avoidance, negative reinforcement and extinction), cognitive behaviour theory, catastrophic misinterpretation theory, formulation of anxiety maintenance by Salkovskis, stress-coping model by Lazarus and Folkman, theory of expressed emotion and systemic theories.

Main phase 3

Phase 3 of the main phase was the implementation of the designed intervention as a clinical trial run and also for getting preliminary understanding of the feasibility. Two participants who met the inclusion criteria of the research were conveniently selected and intervention was provided. A detailed case analysis was conducted before the intervention. Socio-demographic sheet, psycho-social history, mental status examination, visual analogue scale and self reports were the measures used at this phase of the study. Along with this an informed consent was obtained from the participants before their participation. At the end of the intervention participants provided a rating on visual analogue scale and a self report about various aspects about the intervention, and this was undertaken for content analysis for getting a better picture about the practicability and feasibility of the intervention.

- There was a difference on the rating of all the domains (attainment of target goals) on the visual analogue scale, comparing the first and last sessions.
- Experience of mindfulness was reported as relaxing and calming
- Perceived outcomes of the interventions were reported to be, becoming more aware of oneself, less worry about asthma, reduction in avoidance to great extend, feeling that something can be done about the disease, more easiness

in breathing experiencing asthma, improvement in head ache after meditation, able to lie down and sleep even during asthma episodes.

- Assumed process behind changes are through reducing tension, less preoccupation thinking about breathing, try out of things which have been avoided and changes in knowledge about asthma.

- Felt difficulties are time consumption, initial difficulty of mindfulness practice, not being able to practice on some days and difficulty in keep attending for long time.

Researcher's reflection about the delivery of the intervention has also been reported. Implementation of the MBAMP helped the researcher to realize the gap between designing and doing of the intervention. It also helped to get insights about the strong and weak aspects of the structure and delivery of the intervention. The strong aspect is the sound theoretical back up of each components being included in it, and the matching of the various components with the phenomenology of asthma. The weak aspects are its length and time required to complete 10 sessions. Regarding the fidelity, a number of sessions were re-scheduled due to the participant's inconvenience. A number of internal and external facilitators and barriers affected the delivery of MBAMP in a number of ways. Facilitators were cooperative attitude of the participants, and the psychological orientation of the Pulmonologist with whom the researcher had tie up. One of the barriers was unforeseen events that happened during the course of delivery of the intervention. Making them adherent on home works was another barrier. Researcher had to remind them about the relevance of recording personal experiences related to the

intervention and asthma symptoms. The biggest challenge associated with the research was that recruiting participants for the clinical trial run.

Fine tuning of the MBAMP

Content-related modifications were not suggested- either from expert validation or from the participants' feedback. Instead suggestions were received with respect to making the intervention more context-specific and flexible, such as;

- Number of sessions can be varied, without affecting the total conceptual framework of the intervention
- Necessary modifications can be made to make the intervention fit with the nature and intensity of client's difficulties.
- If the client is showing difficulties predominantly in one or two domains, relative importance can be given and correspondingly weighted time can be spent on these dimensions.
- Involving family is not mandatory, as this may not be applicable in all cases.

Limitations of the present study

- The study may have limited scope with respect to its applicability within male population because the number of males was less during both phases of the research. Better understanding is necessary regarding how the management programme developed through this study would work with males having Asthma.

- Another limitation of the study arises, although inescapable, from the theoretical frame work adapted for carrying out the research. The MBAMP designed through the study may only be applicable for people with good meta-cognitive ability, the reason being that mindfulness has been proved to be successful with such category of individuals.

- Since asthma is a chronic condition, long term follow up programmes are needed to assess the quality of an intervention program. On the other hand, it is necessary that such an intervention be assessed for immediate experiential feedbacks that may define the longevity of the intervention itself, which is successfully carried out by the present study.

- The study hasn't incorporated any objective measure (like Peak Expiratory Flow Rate) to assess the symptom severity of Asthma, at any stage of the research. This is primarily because of the reason that the purpose of the research wasn't related to assessing the efficacy of the management program. Although, it would have been better if some kind of objective measure was included in the study.

Strength and contributions of the present study

- The present study has tried to address all the psychological factors contributing to Asthma. Factors such as behavioural, cognitive, emotional and familial, etc., are addressed by the MBAMP, which is one of the first attempts of its kind.

- Strength of the present study is that all the variables selected for the study have sound theoretical back up. Since it's a qualitative study, care was given while selecting different factors.

- It is one of the few Indian studies conducted in this area of research- i.e., mindfulness based Asthma management. This would serve as a preliminary reference for a lot of future researches to be conducted in this area.

- Although the present research used a very small sample to derive the results, the study employed rigorous methods of data collection and analysis, which makes the results stay valid and applied. In depth analysis was carried out through the analysis of verbatim reports, session notes and feedbacks.

Suggestions for Further Research

- The study is highly potent to be replicated on a larger sample. Larger samples provide enough room for researchers to make and mark inter-connections within the results obtained. In addition to this, different factors acting as mediators and moderators of the result could be identified.

- The MBAMP developed through this research may be tried out in specific asthma groups, based on the severity of the condition.

- Since the management programme developed here is for general asthma conditions, further research can be carried out in order to adapt the programme applicable to asthma issues which exist co-morbid to other psychological disorders such as depression and anxiety.

- Studies of a more longitudinal nature can be carried out so that asthma as a chronic condition would be better addressed.

- Studies can be conducted in order to refine the MBAMP developed through this research, in terms of its applicability in different settings.

Implications for practice

- The present research contributes to existing asthma treatment practices in such a way that Multidisciplinary hospitals can combine conventional pharmacological treatment with psychological interventions based on MBAMP. There is an emerging trend of developing multidisciplinary programmes for Asthma rehabilitation in our country. The MBAMP developed through this programme can be utilized in this perspective.

CHAPTER SUMMARY

This chapter provides a glimpse of the overall processes and inferences of the research. It summarizes the aim, objectives, and key questions of the research, working definitions, significance of the study, methods and major findings and inferences of the study. Limitations and strength of the study along with the research and practical implications are reported at the end of the chapter.

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APPENDICES

APPENDIX I

INFORMED CONSENT- EXPERT INTERVIEW

Information about the study

I am conducting a study to explore the psychological correlated of Asthma and to develop mindfulness based management programme for Asthma. It is aimed at understanding the psychological factors behind the triggering, exacerbation and maintenance of Asthma and to develop mindfulness based intervention on the basis of these identified factors. It has a pilot phase and a main phase where data will be collected from different groups of people like individuals with Asthma, clinical psychologists, pulmonologists, etc.

The current phase of the study requires the participation from pulmonologists in order to derive most common psychological correlates found in Asthma. Pulmonologists always have the first hand information about Asthma and Asthma patients. So in this initial phase, the researcher, using the method of interview, collects data from pulmonologists. The data collected may include the psychosocial factors which are involved in Asthma and how these factors are being dealt with by the clinicians.

Participation in the interview is voluntary. It would be a one-to-one interaction, taking about 30-40 minutes.

Confidentiality:

The entire process of the interview will be recorded using voice-recording equipment. This is because the researcher thinks that each and every piece of information provided by the participants of the interview is important and cannot be missed out. This voice record will be used only for research purposes. Further, person-related data will not be used anywhere in the research nor it will be exposed to a third party, under any circumstance. Participant can choose to stop and quit the interview whenever they like to.

Undertaking:

Your permission to participate in the expert interview-conduced among pulmonologists- is sought by Neethu lal V, Research scholar, department of Psychology, University of Calicut. The participant will have the right to refuse the consent or to withdraw it during any part of the study. Personal data provided by the interview will be kept strictly confidential. Participant can contact the researcher or the research guide for any clarification at any point of the study.

Consent from the participant of the interview:

I have been informed that the interview conducted by the researcher is for the sake of identifying the psychological correlated of Asthma and the related issues. I understand that the data which I provide would only be used for research purposes and that too without revealing any person-identifying data. I understand that the

participation is voluntary and I have the right to refuse the consent or to withdraw the same at any point of the research.

I..... under signed give my consent to be a participant in the interview which is conducted as a part of research titled ‘Exploration of psychological correlates of asthma and development of a mindfulness based asthma management programme’.

Signature (participant)

Name:

Address :

Investigator: Neethu lal.V , Ph. D. Scholar, Dept. of Psychology,university of Calicut. No: 9526313831

Guide: Dr.C. Jayan, Professor, Dept. of Psychology,university of Calicut. No: 9446405056

APPENDIX III

INFORMED CONSENT- CLINICAL TRIAL RUN

Information about the study

I am conducting a study to explore the psychological correlated of Asthma and to develop mindfulness based management programme for Asthma. It is aimed at understanding the psychological factors behind the triggering, exacerbation and maintenance of Asthma and to develop mindfulness based intervention on the basis of these identified factors. It has a pilot phase and a main phase where data will be collected from different groups of people like individuals with Asthma, clinical psychologists, pulmonologists, etc.

The current phase of the study requires participation of clients in the trial run conducted to test the feasibility and practicability of the Asthma management programme developed by the researcher and thereby to fine tune the same. The mindfulness based Asthma management programme will be implemented in two individuals who are currently suffering from Asthma. The intervention is scheduled as one session per week, with each session taking about one hour. So, it will take a total of two and a half months to complete the intervention. This intervention is aimed at addressing the psychological factors involved in Asthma and would help the clients to better manage their Asthma symptoms.

The intervention programme will not interfere with the current medical treatments undertaken by the participant, if any. And it is important to understand that this intervention is no way a substitute to medical treatments.

Because it is a clinical trial run, it is also important to understand that the benefits claimed or offered by the intervention are not guaranteed and instead, are only theoretically derived.

Participation in the interview is voluntary. The data derived through this clinical trial run will only be used for research purposes. Further, person-related data will not be used anywhere in the research nor it will be exposed to a third party, under any circumstance. Participant can choose to stop and quit the intervention whenever they like to.

Undertaking:

Your permission to participate in the clinical trial run is sought by Neethu lal V, Research scholar, department of Psychology, University of Calicut. The participant will have the right to refuse the consent or to withdraw it during any part of the study. Personal data provided by the interview will be kept strictly confidential. Participant can contact the researcher or the research guide for any clarification at any point of the study.

Consent from the participant of the interview:

I have been informed that the clinical trial run conducted by the researcher is for the sake of determining the feasibility and practicability of the Asthma management programme developed by the researcher. I understand that the data which I provide would only be used for research purposes and that too without revealing any person-identifying data. I understand that the intervention will not do any kind of harm to me physically or psychologically and that it would not interfere with the current medical treatment I am undergoing. I understand that the participation is voluntary and I have the right to refuse the consent or to withdraw the same at any point of the research.

I..... undersigned give my consent to be a participant in the clinical trial run which is conducted as a part of the research titled 'Exploration of psychological correlates of asthma and development of a mindfulness based asthma management programme'.

Signature (participant)

Name :

Address :

Investigator: Neethu lal.V , Ph. D. Scholar, Dept. of Psychology,university of Calicut. No: 9526313831

Guide: Dr.C. Jayan, Professor, Dept. of Psychology,university of Calicut. No: 9446405056

APPENDIX IV

INFORMED CONSENT- FGD

Information about the study:

I am conducting a study to explore the psychological correlated of Asthma and to develop mindfulness based management programme for Asthma. It is aimed at understanding the psychological factors behind the triggering, exacerbation and maintenance of Asthma and to develop mindfulness based intervention on the basis of these identified factors. It has a pilot phase and a main phase where data will be collected from different groups of people like individuals with Asthma, clinical psychologists, pulmonologists, etc.

The current phase of the study requires the participation from clinical Psychologists in order to derive various perspectives about the management of asthma. Data would be collected using the method of focus group discussion, from clinical Psychologists. The data collected may include interventions techniques and approached to address certain psychological correlates of asthma. Participation in the FGD is voluntary and it would be taking about 45-50 minutes.

Confidentiality:

The entire process of the FGD will be recorded using voice-recording equipment. This is because the researcher thinks that each and every piece of information provided by the participants of the FGD is important and cannot be missed out. This voice record will be used only for research purposes. Further, person-related data will not be used anywhere in the research nor it will be exposed to a third party, under any circumstance. Participant can choose to stop and quit the FGD whenever they like to.

Undertaking:

Your permission to participate in the FGD-conduced among clinical Psychologists is sought by Neethu lal V, Research scholar, department of Psychology, University of Calicut. The participant will have the right to refuse the consent or to withdraw it during any part of the study. Personal data provided by the FGD will be kept strictly confidential. Participant can contact the researcher or the research guide for any clarification at any point of the study.

Consent from the participant of the FGD

I have been informed that the FGD conducted by the researcher is for the sake of developing a intervention for the management of Asthma. I understand that the data which I provide would only be used for research purposes and that too without revealing any person-identifying data. I understand that the participation is voluntary and I have the right to refuse the consent or to withdraw the same at any point of the research.

I..... under signed give my consent to be a participant in the FGD which is conducted as a part of research titled ‘Exploration of psychological correlates of asthma and development of a mindfulness based asthma management programme’.

Signature (participant)

Name:

Address :

Investigator: Neethu lal.V , Ph. D. Scholar, Dept. of Psychology,university of Calicut. No: 9526313831

Guide: Dr.C. Jayan, Professor, Dept. of Psychology,university of Calicut. No: 9446405056

APPENDIX VI

SOCIO DEMOGRAPHIC SHEET

1.	Name	:
2.	Age	:
3.	Sex	:
4.	Marital Status	:
5.	Educational Qualification	:
6.	Occupation	:
7.	Socio-economic strata	:

Clinical characteristics:

1.	Psycho-social history	:
2.	Diagnosis	:
3.	Duration	:
4.	Treatment history	:

APPENDIX VII

MENTAL STATUS EXAMINATION

- General appearance and behaviour:
- Speech:
- Mood:
- Thought form and content:
- Perception:
- Cognitive functions:

Impression

APPENDIX VIII

FGD PROBES

Introducing the participants to FGD: Good morning/afternoon everyone. I would like to start by welcoming you all to this focus group discussion and thank you for taking time in participating in it. Now, as you might already know, we will be talking about different aspects of the intervention to be proposed for addressing various psychological correlates of asthma.

Before we continue, let me introduce myself. I am Neethu lal, and I am a doctoral research fellow in the Department of Psychology, University of Calicut. I will be your facilitator for the discussion.

As I mentioned, I am developing a module/program for the psychological management of asthma. I will give you a brief introduction about asthma reversible airflow obstruction, airway inflammation, and increased bronchial responsiveness to a variety of stimuli, ranging from allergens and other irritants to strong emotions. Wheeze, shortness of breath, chest tightness and cough that varies over time and in intensity, together with variable expiratory airflow limitation are the common difficulties associated with asthma. A number of psychological factors are associated with asthma. In the first phase of the current study researcher has explored some of the psychological correlates such as conceptualization of illness, cognitive factors, behavioural factors, emotional factors, familial factors, attitude to treatment, asthma related self efficacy and self concept. I will be explaining about each of these variables to make it clear for you. This FGD is intended to explore your perspectives on the strategies to address each of these domains.

Your contributions will help me in developing the program in such a way that it becomes acceptable, appropriate, and useful to the maximum.

My role as the facilitator is to guide as well as encourage discussion by listening and asking questions. I would like to get as much feedback from you as possible. Keep in mind that your participation and opinions are important. I also want to tell you the reason why you were invited. You were invited because I believe that while developing a program or module that aims at addressing psychological factors, it is important to get your perspective as you are practicing clinicians and you would be dealing with the target areas similar to that I have mentioned earlier.

As mentioned in the consent form, the whole discussion is being audio recorded because I do not want to miss any of your comments. Often people say important things, and it is challenging to write down all the points. You can be assured about the confidentiality of what you say. Any of the data that identifies any of you will not be shared or mentioned in any of the reports.

If you are all ready, let us begin.

Before the discussion starts, I would like to put some ground rules so that the discussion proceeds smooth.

Ground rules

1. One person talks at a time. Listen actively and respect others while they are talking
2. Everyone gets a chance to speak. Each one's viewpoint is essential.
3. Respect everyone and make sure that you leave enough time for others to talk.
4. People can have different opinions, and it is alright to express your views
5. There are no right or wrong answers, only different perspectives.
6. Participate to your fullest ability, the more the participation is, the better the outcome
7. Remember that the aim is to get a better understanding of the topic. Not to agree or disagree with a particular idea.
8. Respect privacy. You need not disclose sensitive information by naming yourself/a particular person. You can mention experiences in general. Also, please do not reveal personal data about other participants. Discussion was carried out on the following areas:

Probes

- Is there any need or relevance of psychological intervention for the management of asthma?
- What could be the frame works of intervention you would have used if you are proposing this intervention?
- What all Potential contents can be included in the proposed intervention (in connection with the themes)?
- What is the rationale for the suggested techniques (theoretical or experiential)?
- How could be the structure of the intervention and what all strategies can be incorporated in to it?
- What are the mechanisms of change you assume to work behind suggested techniques?
- What could be the Dos and DONTs of the intervention?
- Other Suggestions about number of sessions and other things you would like to add.

APPENDIX IX

EXPERT VAIDATION FORM

Dear Sir/ Madam,

I am sending you a copy of the module that has been developed as a part of my Ph.D. work (Title: exploration of psychological correlates of asthma and development of a mindfulness based asthma management programme). The proposed module is intended for addressing various psychological correlates of asthma using a mindfulness based asthma management programme proposed by the researcher. For getting a back ground of the module, a draft about the target areas to be addressed through the proposed intervention is also attached along with the intervention module. Please rate the various aspects of the modules based on the quality dimensions and mention any suggestions for improvement.

Please indicate your response for each of the domains on a 0-5 rating.

5 = very good

4= good

3 = neither good nor bad

2 = bad

1 = very bad

Dimensions	**Rating (0-5)**	**Qualitative feed back**
Appropriateness of the title		
Adequacy of the theoretical basis		
Adequacy of the components and its rationale		
Logical order of the components		
Adequacy of the Mode of delivery		
Intervention structure		

APPENDIX X

THERAPEUTIC EXPERIENCE AND FEEDBACK

- How was the overall experience of the intervention?

- How did you benefit from the intervention program?

- What are the processes you assume behind the changes you have experienced?

- Were there any difficulties?

APPENDX XI

ASTHMA DIARY

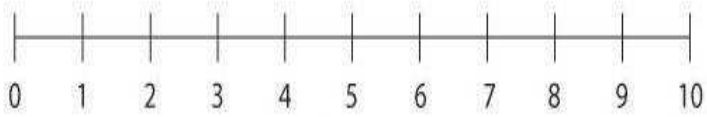
Date	Asthma related difficulties	Severity	How did it affect you?

APPENDIX XII

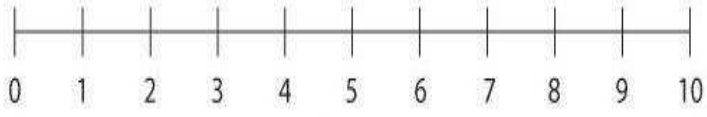
VISUAL ANALOGUE SCALE

"This is a visual analogue scale, which is used to measure your perceived attainment of various outcome dimensions related to the intervention you are undergoing. It is a 0-10 visual scale, where 0 indicates least level of attainment of the target dimensions and 10 indicate highest level of attainment. You are requested to mark where you belong to in the given scale, on each dimension given below."

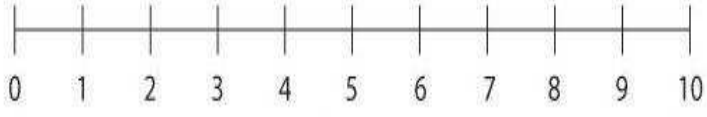
- Knowledge about asthma



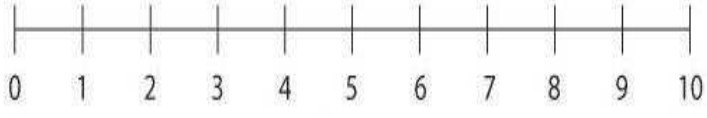
- Reduction in avoidance behaviours



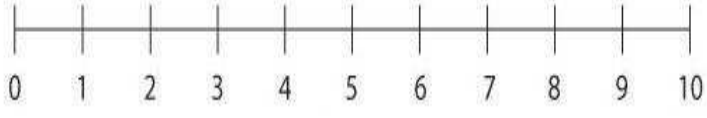
- Management of asthma related thoughts



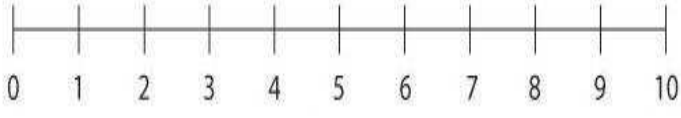
- Awareness of body sensation



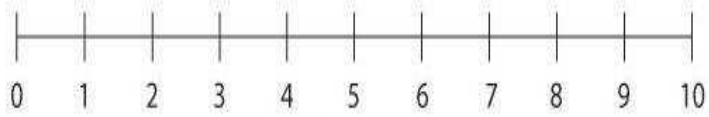
- Management of emotions



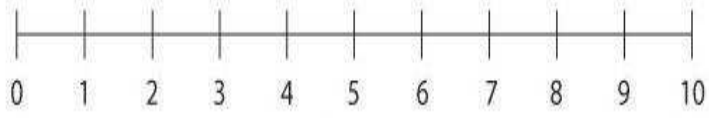
- Skills of problem solving in daily life



- Interaction with family



- Sense of control over asthma and mindfulness skills



APPENDIX XIII

BODY SCAN MEDITATION

This practice is called body scan meditation for deeper physical and mental relaxation. During this process it is best if you can manage to stay awake. Wear loose clothing so that your waist does not stretch while breathing. Remember not to try too hard to relax. Just accept whatever happens in you and experience it. Allow yourself to be exactly just the way you are rather than trying too hard to change things in life as we usually do. Do as best as you can and be aware of how you feel. Remember there is no right way to feel.

Now lie down on your back on the bed or mattress and allow your eyes to close gently, letting the arms lie on alongside your body and palms open to ceiling and feet to fall away from each other. Now just bring your attention to the fact that you are breathing (Pause 10 sec). Not forcing the breath in any way… just observing the air that goes in and out of your body and directing your attention particularly to your belly... your abdomen and feeling the sensations in that region as the breath goes in and your belly expands gently and as the breath goes out of your body, observe your belly relaxing. Follow the movement of your belly with your in and out-breath (Pause 20sec). On each out-breath, allow yourself to let go to sink a little deeper into the bed with your in-breath and out-breath… one following the other (Pause 10sec).

Now when you feel ready, shift the focus of your attention to the toes of your left foot. Focus on each of the toes of your left foot and experiencing any sensations – warmth, tingliness or whatever, just feel the way they are (Pause 10sec). As you breath in, just imagining that the breath is entering the lungs and then passing down into the abdomen, into the left leg and out of the left foot and as you breath out the breath is coming all the way back up through the abdomen, chest and out from your nose (Pause 10 sec).

Now when you are ready, on an out-breath, just let go of the awareness of the toes completely and bring the focus on the bottom of the left foot and whatever the feeling is in this region… breathing in from the bottom of the left foot and as you breath out, letting it go and coming to focus now on the heel, where the heel is coming in contact with the bed and feeling the sensations of touch, pressure and breathing into the heel… and again on an out-breath, just letting go of the heel and now let the feeling spread to your left ankle as well. Let the breath be taken into the ankle and on an out-breath just letting it go…. And expanding the awareness into the rest of the foot, top of the foot and right into your bones and joints… (Pause 5 sec). Then directing the attention into the lower left leg, the calf… shin… knee… and so on (Pause 5 sec). Just accept the feelings as you feel, breathing with them and then let go of this part and focus now on the sensations on the lower left leg, the thigh… and the abdomen… just being aware of the sensations in these parts…. Breathing into them and as you breathe out, just letting go of this part… (Pause 10sec)

Let’s move over the right leg and become aware of the toes… the right lower foot and the right ankle… breathing with it and letting go as you breathe out with these sensations in these parts (Pause 20sec). Now become aware of the right knee, right thigh and the whole of the right leg…. Experiencing these sensations and breathing with it and on an out-breath just letting it go and sink into a deeper state of awareness and stillness (Pause 20sec).

Let’s direct the attention to the lower back… and the upper back… and the whole of the back… when you become aware of any tension, tightness, fatigue… be aware of these and breathe into them… and then have a sense of letting it go as you release on the out-breath… (Pause 15 sec)

Now allow the attention to shift to your belly… experiencing it rising and falling as you breathe in and breathe out (pause 5 sec) and gently shifting the awareness to go to your chest as it expands with in-breath and contracts with out-breath…(pause 5 sec) and feel the beat of your heart…. Lungs expanding on both the sides of your heart...nourishing every tissue of your body and blood returning to the heart and purifying the body with renewed energy with each breath.

Now be aware of the sensations in the tips of your fingers of both hands… your palms… hands and the wrists… (Pause 5 sec). Whether it is dampness or tingliness... just feeling the pulsations of the arteries and blood flow to your hands…. Forearms… the elbows… and the upper arms…the biceps and the shoulders…. (Pause 10 sec). And if you feel any tension just breathe into it and letting it go or releasing as you breathe out… sinking into the deeper state of relaxation and stillness.

As you become ready, move your attention to the back of your neck and the entire throat region…breathe into these sensations you experience and let go as you breathe out and gently becoming aware of your face… which stores tension over the course of the day (pause 10sec). Focus on your jaws, chin and experience it as it is right upto the whole of the face… your cheeks… lips… mouth… and teeth…. Be aware of the nose… the breath moving in and out of your nostrils (pause 5sec). Just being aware as the breath goes on (pause 20sec). Be aware of your eyes… the eyebrows… and the space in between your eyebrows… the tension within it and the temples… let dissolve this tension as you release your breath… (Pause 5 sec). Now the forehead…let it soften as you breathe in… where there is tension and stress (pause 5 sec). Just breathe in… nourish your face and feel the whole of your head, the top of your head…. Breathe out with energy flowing in and out from head to the toe (pause 5 sec)… in to a deep state of relaxation… feel your body as a whole… and experiencing ourselves just the way we are… accepting things as they are and experiencing the quality of being able to love and care…(pause 10sec). Just be aware that you feel relaxed and nourished… and gently open your eyes and congratulate yourself for spending time for your health…

APPENDIX XIV

MINDFULNESS MEDITATION

To begin with the practice of meditation, set aside a time and place where you would not be interrupted. Settle into a comfortable sitting position on a straight backed chair. Place your feet flat on the floor with your legs uncrossed. Gently close your eyes (pause 20 sec)

As you sit here… just bring your attention to the fact that you are breathing (pause 10sec)

Be aware of the movement of the breath as it goes in and comes out of your body…not manipulating the breath in any way, simply being aware of it and the feelings associated with breathing (pause 20sec). If you feel comfortable with it, observe it deep down in your belly… expanding and relaxing with each in-breath and out-breath. Simply being totally here with each moment, with each breath…. Not trying to do anything… simply being with your breathing (pause 20 sec). Observe each in-breath and each out-breath – a never ending cycle as if you were riding the waves of your breathing (pause 90sec). Being aware of the duration of your in-breath and out-breath from moment to moment (pause 90 sec). Sooner or later your mind will wander away from the focus of your breath to thoughts, daydreams, worries, future or whatever. This is perfectly Ok, this is simply what minds do. Simply remembering that every time your mind has wandered, gently bringing it back to the present and observing the flow of your breathing. Using the breath as an anchor in meditation to focus your attention will help you bring back to the present. Whenever your mind is moving out of the present or being unbalanced or getting preoccupied or react, it will help you keep in the present state of relaxed awareness and stillness (pause 90sec).

As you become comfortable with your breath, allow the focus of awareness to expand to include the sense of your body as a whole as you sit here…. Feeling breath from head to your toes (pause 20 sec). Be aware of not only breath but your body as a whole and sitting here with whatever comes up without reacting….. Just being totally here (pause 20sec). Off course it happens to all of us that some sensations, pain or discomfort in one part of the body becomes overwhelming that it becomes difficult to stay focused from time to time. If this happens, just mindfully shift to comfortable position or simply be aware of these sensations as they subside… (Pause 20sec)

And whenever you notice that your mind has wandered off to future or thoughts just bring it back to your breathing and the sense of your body as you sit here…. Not going anywhere… not doing anything, just simply sitting….. Be totally with yourself at this moment (pause15sec).

As you become comfortable with your breath and body, let the focus of awareness expand towards hearing or sounds that you may be aware of in the environment or sounds within your body… not going for searching things to hear…. Just full awareness of hearing from one moment to another (20sec), not judging it

whether you like it or not… just hearing (60sec). If you notice that your mind is wandering off from your focus of awareness, just bring it back to your ears to right now to whatever is here (20sec)

Once again as you sit here, allow your focus of awareness to expand and this time, include thinking…. To include thoughts as they come to your mind (pause 20sec). The observation of thinking process itself… just seeing each thought that comes to your mind as a thought… as a mental event, just as a sound is an event (pause 20sec).

Thoughts could be about anything – the future, body, feelings, thoughts about time, thoughts about thoughts… whatever they are, observe just as they come and go, just be aware of these thoughts coming and going as you sit here (90sec).

If you find yourself drifting away from the thoughts just use your breath to bring your focus back at the present, whatever they are fears, worries, pressures or disease…just observe these as thoughts without following them or rejecting them, simply being here at the present moment (pause 30sec).

We began with breathing, then to expanded awareness to include body as a whole, then the sounds as well and thoughts as they come to your mind from time to time… now just let go of all these and instead of focusing on anyone, just allow yourself to just sit here and be with yourself. If thoughts come, observe thoughts… if sounds, then observe sounds… if sensations in your body then notice it and if its breath then be aware of that (pause 30sec), just sitting with stillness and calmness in the present.

Now slowly open your eyes recognizing that you have taken out time and effort to be totally with yourself and cared for self.