CHAPTER-II

REVIEW OF RELATED LITERATURE


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Content

2.1 Studies conducted in Gujarat State

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Asthma is a psychosomatic problem in which there is an increased and exaggerated air narrowing response to triggers such as allergens and exercise, which leads to major recurrent symptoms such as coughing, panting etc.

Review of literature in the field of Asthma, is a theoretical base for carrying out the further research in the chosen direction of study which becomes foundation stone for exploring the new and innovative concepts. Review of literature also provides an opportunity of research which becomes instrumental to describe, summarize, evaluate and clarify the selected area of study. It signifies identification of available documents (both published and unpublished) on the given topic, which comprises of information, ideas, databank and evidence formulated from a particular angle to fulfill certain scope, objective, aim or express views regarding its investigation.

Panoramic view of historical background is also provided by review of literature along with the present state-of-the-art approach, delta improvements and new vistas of research. It also guides to choose the appropriate methods to handle the identified problem for investigation. In gist, it is a desirable way to compile the brief survey of the work carried out in the world to chalk out the road map for future.

According to Uma Sekaran (2009) literature review can be defined as, “A broad documentation review by which published and unpublished work from secondary data in the areas of a particular interest to the researcher”.

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The present research was intended to study the impact of psychological aspects like Adjustment, Depression and Well-Beingness on the disease of Asthma. In order to obtain a detailed insight on the theme; researcher reviewed the existing literature from various sources. The sources were as follow:

- Central Library Gujarat University, Ahmedabad.
- Library, Kanoria Centre for Medical Education, Ahmedabad.
- M.J. Library, Ellisbridge.
- Hansa Mehta Library, M.S. University of Baroda, Vadodara.
- Psychology Department Library, Saurashtra University, Rajkot.
- Online references through various websites.

The literature obtained through various sources related to the present research problem is described in Chapter-2. However, the references and literature reviewed are presented into three parts: (1) Studies conducted in Gujarat State (2) Studies conducted in India and (3) Studies conducted in World.

2.1 STUDIES CONDUCTED IN GUJARAT STATE

Pravin et al (2015) studied an evidence based review on Ayurvedic management of Tamaka Shwasa (Bronchial Asthma). The present study was a review on the management of Tamaka-Shwasa (Childhood Bronchial Asthma) who were being managed through Ayurvedic approach that includes a combination of Shodhana Chikista, Ayurvedic drugs,
lifestyle management and wholesome diet. Ayurvedic drugs include the respiratory tonics and naturally occurring bronchodilator and immune-modulator. The objective of the study was to assess the effectiveness of internal i.e. herbal and herbo-minerals drugs (Shamana Chikista) and procedure based Panchakarma therapy (Shodhana Chikista) for the treatment of Tamaka-Shwasa. This review was done by compiling the classical Ayurvedic literature, Ayurvedic pediatric books, Pharmacology (Dravyaguna) and Rasashastra books, magazines and research journals as well as PUBMED, MEDLINE database. Based on the collected information, logical interpretation was done to review efficacy and mode of action of Vamana, Virechana, herbal & herbo-minerals drug in the management of Tamakashwasa. Thus, study result concluded that the Shodhana, Shaman, herbal and herbo-minerals compound drug has got significant anti-Asthmatic properties. The study concluded that Shodhana, Shamana, herbal and herbo-minerals products are important in the treatment of Asthma. Shodhana therapy is effective in adult patients but no evidence regarding in case of children has been proved. Drugs doses are adjusted for children according to weight, age and severity of disease. Herbal and Herbo-minerals products remain popular for Asthma.

Suthar, Varsha & Vaishnav (2015) examined the quality of prescribing for hypertension and bronchial Asthma at a tertiary health care facility. The aim of this study was to determine the quality of prescribing in hyper-tension and bronchial Asthma in Tertiary Health Care (THC) setting, at a hospital in Gujarat state of India; using the new Prescription Quality Index (PQI) tool and to assess the reliability of this tool. A prospective cross-sectional study was carried out for 2 months in order to assess the quality of prescribing of anti-hypertensive and anti-asthamic drugs using recently prescribed PQI at THC facility. Patients with hyper-tension and bronchial Asthma, attending out-patient departments for at least 3 months were included. Complete medical history and prescriptions received were noticed. Total and
criteria wise PQI scores were derived for each prescription. Prescriptions were categorized as poor, medium and high quality based on total PQI scores. A total of 222 patients were included. Mean age was 56 ± 15.1 years (range 4-87 years) with 67 (30.2%) patients above 65 years of age. Mean total PQI score was 32.1 ± 5.1. Of 222 prescriptions, 103 (46.4%) prescriptions were of high quality with PQI score ≥ 34. The value of Cronbach’s α for the entire 22 criteria of PQI was 0.71. The study concluded that, as evaluated by PQI tool, the quality of prescribing for hypertension and bronchial Asthma is good in about 47% of prescriptions at THC facility. PQI is valid for measuring prescribing quality in these chronic diseases in Indian setting.

Nagadesi and Arya (2014) investigated timber degrading fungi in sawmills of Gujarat. A survey was conducted during 2007 to 2011 in different sawmills of 5 districts of Gujarat i.e. Vadodara, Ahmedabad, Bharuch, Rajkot and Jamnagar. In all 94 sawmills were surveyed, the 28 sawmills were from Vadodara, 29 from Ahmedabad, 12 from Bharuch, 21 from Rajkot and 4 from Jamnagar. The results show that out of 94 sawmills surveyed, 84 sawmills were having timber rotting fungi associated with wood. Maximum fifteen and thirteen fungal species were observed in saw mills of Chhani road, followed by 11 in station road, 7 in Dhabhoi road and 6 in Harni, Vadodara. Fours woods uninfected are Beyo, Marinty, Ash, and Arjun. Fourteen different types of fungi were found associated with teak, followed by seven in pinus, madhuca, Acacia nilotica, six in babul, neem, four in tamarind, Pithacoelobium and three in mango, Eucalyptus, African Mahagoni, Kapoor, Peltophoram rouxburghii, Derris pinnata wood respectively. The commonly observed timber decaying fungi were Schizophyllum commune, Flavodon flavus and Ganoderma lucidum belonging to Basidiomycota. Ascomycota members included was Daldinia concentrica and Xylaria polymorpha. The study concludes that teak wood present in sawmills was infected with 14
types of fungi in which *Lenzites sterioides* and *Trametes versicolor* damaged the wood severely was reported for the first time. Greatest concentration of fungal spores, decay fungi was identified from the sawmills of Gujarat, India. *Aspergillus niger, A. flavus, A. fumigatus, A. awamori* producing toxins were reported from sawmills of Gujarat studied. It was also found that inhalation of fungal spores may result into decrease in lung function, bronchial hyperresponsiveness and respiratory disorders, such as: organic dust toxic syndrome (ODTS), allergic alveolitis, Asthma, non-Asthmatic chronic airflow obstruction, chronic bronchitis, Mucous Membrane Irritation Syndrome (MMI) and rhinitis (Mandryk, 2000). In the present study also the workers working in sawmills of Gujarat which contain teak woods were suffering from allergic, chronic and respiratory problems.

Civil Hospital, Gujarat (2013) conducted the study on a randomized, comparative, multicentric clinical trial to assess the efficacy and safety of Zileuton extended-release tablets with Montelukast sodium tablets in patients suffering from chronic persistent Asthma. As per news reporting by News Rx journalists, “Leukotriene (LT) are the anti-inflammatory drugs that are useful as an add-on therapy with controller medications of first-line Asthma. The sample consisted of 18-65 years suffering from mild to moderate chronic stable Asthma, who were randomized to take Zileuton ER or Montelukast as treatment medicines for 12 weeks. The assessment was done through Peak Respiratory Flow Rate (PEFR) and Asthma symptoms on monthly scheduled out-patient visits. The results suggest that in Zileuton ER group a lesser but not significantly adverse effect of event rate is observed than the group taking Montelukast. The common problems between both the groups are headache and gastrointestinal effects. The study concluded that Zileuton ER seems to be more efficacious than the treatment of Montelukast and can be applied to the patients suffering from mild to moderate chronic persistent Asthma in adults.
Khara et al (2013) performed comparison of Bronchodilatory efficacy potential of Racemic Salbutamol and Levo-Salbutamol in patients with mild to moderate persistent Asthma. The study was conducted to compare bronchodilatory efficacy potential of Salbutamol with Levo-Salbutamol. The present study was conducted on adult patients attending at a tertiary care hospital of Jamnagar city in Gujarat, India. All patients having bronchial Asthma attending chest clinic (OPD) during the study period of 6 month were enrolled in the study. Ethical clearance was taken from the ethical committee of the institute. Written consent of eligible patients were taken after explaining the study objectives. Total 100 eligible patients with mild to moderate persistent Asthma were enrolled in the study. Patients were divided in two groups, 50 subjects in each group. After performing baseline spirometry, group A and group B subjects were given 2.5 mg salbutamol and 1.25 mg levosalbutamol, respectively, through nebulizer (continuous, compressor type of nebulizer with drug particle size 0.5-5 micron and average nebulization rate 0.2ml/min.). After 20 minutes, repeat spirometry was performed to measure bronchodilatory response. The results show that two groups are comparable for base line characteristics, as there is no age & sex wise and symptom wise significant difference in the distribution of patients (p >0.05 for all variables). Overall picture is suggestive of no significant statistical difference in bronchodilatory potential between Salbutamol and Levo-Salbutamol. Positive raise in FEV1, FEV1/FVC% and PEFR is statistically not significant in both groups (P>0.05 for all three). The study concluded that Salbutamol and Levo-Salbutamol had isoeffective bronchodilatory potential in bronchial Asthma patients when used at equipotent doses.

Nirmala (2013) examines the perspective of Occupational Health and Safety (OHS) in textile industries in Gujarat state of India. The concept of occupational Health and Safety in developing countries is limited and diseases and accidents at work remain one of the most
appalling tragedies of the modern industrial age therefore the incidence of occupational
diseases and injuries is high. No sufficient data about OHS are available in India because the
majority of accidents are not reported to the Labour Department. India also has poor
occupational safety and health legislation and infrastructure. The health and safety measures
prescribed in most of the laws have not kept pace with the rapidly changing the biggest
enterprises with the largest employed rate in India. Keeping in view the present study has
been undertaken. The sample was consisted of six randomly selected textile units from the
Gujarat State, India. There are different hazards which faced by the workers in textile
industry. These hazards are explained as; biological hazards (cotton dust) and physical
hazards. Croften (1981) explained that in 1831 that Dr. J.P. Kay a physician in Manchester,
first drew attention to the disease of Asthma by suggesting that cotton workers suffered from
respiratory disease, Asthma probably as a result of exposure to dust. In 1955 Werner reported
that in early stages the disease is characterized by tightness of chest. Elwod et al. (1986)
mentioned that a great number of textile workers managing cotton and flax suffer from
various respiratory symptoms and show a failure in lung function, leading to Asthma. The
study concludes that the key objectives of the research were to observe the workplace hazards
faced by workers in textile sector. For this purpose a framework prepared which was based
on the literature reviewed. The occupational health and safety deal as a dependent variable.
The study found that there were different issues, which create hurdle to achieve an effective
OHS system in textile industry. There was the shortage of technical facilities such as air
checking and biological monitoring.

Patel & Mehta (2013) carried out the study to estimate the prevalence of Asthma in
school going children in Ahmedabad. A total of 1561 children were surveyed comprising of
urban (992) and rural population (569) using questionnaire and Pulmonary Function Test.
Data of demographic profile, information on allergy, passive smoking exposure and family history of Asthma were collected by questionnaire. Pulmonary Function Test was carried out for assessment of lung function by spirometer. Results show that prevalence of Asthma among school going children of Ahmedabad, aged 12 to 17 years is, 4.48%. Gender difference and residential area (rural and urban) are not significantly associated with the prevalence of Asthma. Prevalence rates of Asthma among school going children with family history of Asthma (35.71%), allergy (60%) and passive smoking exposure (41.42%) were significantly higher ($p<0.005$). In Ahmedabad population, the prevalence of Asthma among school going children of 12 to 17 years is 4.46%. The study concludes that the prevalence of Asthma is associated with passive smoking, exposure, family history of Asthma and allergy. Presence of allergy is the most prominent risk factor for development of Asthma.

Sadhana, Ashwani & Gupta (2013) carried out a study on air pollution and air quality index of Kodinar Gujarat. This study indicates the air pollution (PM10, RPM, SO2 and NOx) emitted from a cement industry. The study was conducted in summer, winter, and post monsoon season 2011-12 which include the meteorological condition and ambient air quality of the area. The ambient air quality was measured at six locations keeping in view the prevalent wind direction of the area. The data collected were compared with Indian Standard prescribed by Central Pollution Control Board (CPCB). Sampling of air quality was done at various distances from the cement industry at six sampling points. The results show that SPM was higher than the permissible limit at all the sampling points except Pransli the control site but RPM were higher at Ronaj, Muldwarka and Vadnagar than the permissible limit. Air quality index was also calculated and this study indicates that the air quality of Kodinar is unhealthy at various sampling site. The study concludes that people with Asthma or other respiratory diseases, the elderly, and children are the groups most at risk.
Babaria and Vegda (2012) conducted a study on Ethno-Botanical enumeration of angiosperms of Khokhara Hills (Gujarat). The present study was focused on the Traditional Knowledge (TK) of Khokhara hills of Gujarat. Semi-structured interview was conducted in which a list of questions and topics were prepared. The approaches of collecting folk biological information are to communicate with people, to observe what they do and to participate in their activities. Field trips were done, for that, different tracks were selected. Information related to medicinal importance of plants was gathered during the field trip. The result shows that the utilization of plants viz. *Cassia absus*, Bankulthi (local name), utility of leaves is that they are useful in anemia, diarrhea, nasitis, cough, Asthma and hic cough. The seeds powder with dry ginger powder, black pepper and salt is given on indigestion and stomach ache it is also useful in cough, Asthma, piles, leucorrhoea, inflammations. *Commiphora wightti*, Gugal (local name), its gum is employed in rheumatism, obesity, toxemia, sciatica, facial paralysis, diplegia, leprosy, leucoderma, cordial disorder, bronchitis, epilepsy, fever, Diabetes, stengery, cough, Asthma, urinary calculus, skin disease, dysmenorrheal, amenorrhea, wounds and ulcer. *Eucalyptus globules*, Nilgiri (local name), utility of leaves is that oil prepared from leaf is applied on chest and temple in headache, fever, common cold, cough, springs and rheumatism. It is also useful in Asthma, chronic cough, celphalagia, pneumonia, bronchitis, burns, dyspepsia, cardiac, debility, strangury and skin disease. *Evolvulus alsinoides*, Kali Shankhavali (local name), utility of the whole plant is used for decoction is used in fever, nervous debility, and loss of memory, dysentery, diarrhea, cough, chronic bronchitis, Asthma, syphilis and scrofula. *Holarrhena antidysenterica*, Indrajav (local name), its root is used in combination with teak root for T.B., Asthma and jaundice. *Leptadenia reticulata*, Dodi (local name), it leaf is powdered with honey and is used in Asthma. Juice is given in dysentery and juice with honey is given in cough. Its leaf and unripe fruits are used in spermatorrhoea, Asthma and latter eye site. *Mucuna prurita*,
Kuvech (local name), from its seeds the powder is used to prepare a Kauncha pak which is aphrodisiac. 5 gm seed powder is mixed with honey or ghee given orally thrice a day to cure Asthma and Bronchial trouble. *Sida cordifolia*, Bala (local name), from roots infusions are given in nervous and urinary disease and disorder of the blood and bite, bleeding piles, Asthma, gonorrhea, cystic, leucorrhoea, fever, burning maturation. *Terminalia bellirica*, Baheda (local name), its fruits are used to cure in cough, Asthma, anorexia, vomiting, arthritis and general debility. *Withania somnifera*, Ashwagandha (local name), its root juice is used in Asthma and Bronchitis. The leaves are chewed to cure Asthma.

The result also indicates that the common observation of plants used by native people in all the zones showed remarkable difference as plant parts used for various diseases and purposes in their age, status and form. The study concludes that the traditional uses were analyzed on the basis of the interaction, which include individual interviews, group discussions, joint field visits to the study areas, with native people for different area of Khokhara hills.

Hirway and Mahadevia (2012) investigated the status of health & nutrition in Gujarat. This study was conducted in Gujarat by National Council of NFHS-2. The incidence of Asthma was observed higher in rural areas than urban areas for all the age groups viz. <15, 15-59 and 60+ years. Further, incidences of Asthma are higher among females than males. The prevalence rate of Asthma is almost double in rural areas compared to urban areas. The incidence of Asthma among urban and rural area including the distribution of age & gender is 13.04 & 24.51 respectively (Based on IIPS and MEASURE *DHS*+ (2001), p. 128). It has been concluded that in realm of disorders of the respiratory symptoms in 1997, 27.4 deaths were recorded as highest in comparison to others.
Maru & Patel (2012) investigated on the Ethno - medicinal plants used to cure different diseases by tribals of Jhalod taluka of Dhahod district, Gujarat, India. To collect information on the use of some plants by local communities in Jhalod Taluka of Dahod District, ethno botanical studies were carried out. An extensive field survey and group discussions were conducted to get the needed information through interactions with various tribal and rural people. The study collected sample of 36 plant species. The field study was from Jan-Aug 2011 which was centered on village in Jhalod. The informers were asked about the ritual importance of the plant, why it is respected, which parts are used, and for what purposes. They were mainly chosen according to their knowledge of common traditions and/or religious status. The results show that tribal people of the Jhalod used different plant materials in treating various diseases viz. fever, cough, headache, hepatitis, constipation, snake bite, muscular pain and Asthma. It has also been found that Asthma can be cured by the use of ethno-medicinal plants viz. (1) *Solanum Indicum* L. (botanical name), Ubhi Ringani (local name), Solanaceae (family) & one tea spoonful dry powder whole plant is used to cure Asthma, hooping cough (uses) and (2) *Solanum surattense* Burm. f. (botanical name), Bhoringni (local name), Solanaceae (family) & decoction of whole plant is used for fever, Asthma and hepatitis. The study concludes that plants play an important role in every aspect of our lives and without them life is not possible. Plants not only regulate the concentration of gases in the air, but also the only organisms capable of transforming sunlight into food energy on which all other forms of life ultimately depend upon.

Mishra, Dodiya & Mathur (2012) performed a study regarding the assessment of livelihood and educational status of sanitation workers in Ahmedabad. This study was conducted in 25 neighborhoods and 5 zones of the Ahmedabad Municipal Corporation (AMC). A total of 50 sanitation workers were interviewed and through them the condition of
their families was also understood. What was immediately notable was that there is a high incidence of death among men due to workplace-related injuries that has led to a rise in the number of widows and therefore a rise in women-headed households. Objective was (1) to understand the living conditions of sanitation workers after the Gujarat High Court judgment of 2006 and to analyze the present livelihood and (2) education status of sanitation workers in Ahmedabad as well as assess their awareness about laws and government schemes that directly pertain to them. Results show that since sanitation workers and particularly manhole workers are exposed to highly toxic and poisonous substances and gases, they are prone to health hazards and diseases. They spend about 25% of their income on medical expenses. Since their work includes sweeping and cleaning, they are prone to various diseases such as TB, Asthma, cough, backache and infections of the respiratory tract. The study concludes that 32% of respondents replied that their relatives who were also sanitation workers had died from such diseases as cancer, tuberculosis and Asthma. The information of illness on cause of death by Asthma is that of count on 1 in 6.3% of cases.

Analysis of prescription pattern and drug utilization in Asthma therapy was studied by Pinal, Patel & Patel (2012), to evaluate the drug-prescribing trend of anti-asthamic drugs in retail pharmacy outlets during 2009 & 2011 in urban & rural area of Saurashtra region, Gujarat, India. The study was conducted on 601 patients (250 rural & 351 urban), using a developed prescription auditing performa. Data was recorded from the cooperating patients by interviewing and information was filled in the performa. Results show that there was no significant sex difference. Bronchial Asthma was found to be more prevalent in the age group 41 to 60 years. Patients were found to consult the doctor 2 to 7 days after symptoms and pay consulting fee more than Rs 20=00. The collected information suggested that bronchodilators were the most frequently prescribed anti-Asthmatic drugs followed by corticosteroids and
methylxanthine preparation. Analysis of prescription revealed that multiple drug therapy was opted for a significant number of patients as compared to single drug therapy. In combination therapy, the three-drug combination was the most often prescribed. Number of partial purchase of drugs as per the prescriptions was found to be higher in rural area than urban area. Lack of money was one of the reasons for partial prescription. Thus, it can be concluded that the prescribing pattern of anti-Asthmatics in Saurashtra region does not completely meet standard guidelines for Asthma treatment. Hence, there is a need of awareness amongst the physicians of Saurashtra region so that they can follow the guidelines while treating Asthma. Also the patients must be encouraged to complete whole treatment for improving the health.

Prajapati et al (2012) performed a study on epidemiological profile of Acute Respiratory Infections (ARI) in under five age group of children in urban and rural communities of Ahmedabad district, Gujarat. A cross sectional study covering 500 children, under five years of age; living in urban (five zone) and rural (five PHC of Sanand taluka) area of Ahmedabad district from September 2008 to March 2009 was conducted. The results show that occurrence of ARI was found to be 22%, it was lower in urban area (17.2%) and higher (26.8%) in rural area. A significant association was found between ARI and low social class, overcrowded houses, low birth weight, delay start initiation of breast feeding, prelactal feeding, timely given complementary feeding and immunization status. The study strongly concludes towards the importance of basic health promotional measures like proper infant feeding practices, proper nutrition of the child and socio-economic improvement in prevention and control of ARI.

Batterman (2011) performed a study on the Detroit Asthma Morbidity, Air Quality and Traffic (DAMAT). Project period was from September 30, 2007 through September 29,
2010. A two year longitudinal study involving the sample of 210 Asthmatic children was included. The objective of the study is to develop and evaluate a direct health indicator of pediatric Asthma morbidity resulting from exposure to ambient air pollutants using an epidemiological approach that merges existing datasets and incorporates population susceptibility, exposure patterns, and other local conditions. The hypotheses constructed were (1) Daily changes in Asthma morbidity among the pediatric Medicaid population in Detroit are attributable to fluctuations in ambient air pollutant concentrations. (2) Daily changes in Asthma morbidity can be separated into effects caused by regional and local emission sources. (3) Associations between air pollutants and Asthma morbidity are strengthened by accounting for residential location and exposures due to traffic and industry-related pollutants. (4) The spatial pattern of Asthma-related urgent care use relative to other pediatric claims is determined in part by exposure to traffic and industry-related pollutants. (5) The developed indicators provide meaningful measures of health impacts that can inform decision-making and comparative impact assessments. This study develops and evaluates a direct health indicator of pediatric Asthma morbidity resulting from exposure to ambient air pollutants using an epidemiological approach that merges existing datasets and incorporates population susceptibility, exposure patterns, and other local conditions. The result shows that the study will demonstrate links between air pollutant exposure and adverse health outcomes, information needed to improve the understanding and effectiveness of environmental decision-making, including the evaluation of benefits and costs associated with further reductions in pollutant levels. It concludes that the proposed indicator can help to translate environmental information into terms that are meaningful to managers, policy-makers, and the public.
Bhatt et al (2011) carried out an epidemiological study of the morbidity pattern among the elderly population in Ahmedabad, Gujarat. The objective is to study the socio demographic profile and morbidity pattern among geriatric population of study area. The present study was conducted in urban field practice area (UHTC) of Department of Community Medicine BJ Medical College, Ahmedabad. It was a cross sectional community based study done in Kalipinagar area. This center caters the health services among five region having 500 families in each. All elders above age of 60 years are covered in survey on house visit. Data analysis was done using EPI-Info 6.4. The results indicate total 218 elderly were surveyed (Male=74 & Female=144). Mean age of male was 57.44 & of female was 50.31. Among elderly surveyed, 92% were living in joint family. Nearly 34% of female were illiterate. 47.7% of elderly were earning with maximum wages between 1000-2000 Rs/month. Among them majority were suffering from loco motor, visual & hypertension problem. Gender wise association was found significant when comparison was done between normotensive & pre-hypertensive but not with hypertensive. Statistical significance was there between weights of male & female but no significance was there in BMI. Among tobacco users gender wise difference was statistically significant. Pallor ness was common in both the gender. The study concludes morbidity pattern among study population of the persons suffering from Asthma i.e. males 20 (27.0), females 24 (16.7) and a total of 44 (20.2%) respectively. Kartikeyan found 7.92% of the Asthmatic elders; where as in this study 20.2% were having respiratory complaints including Asthma.

Jindal (2010) performed Indian Study on Epidemiology of Asthma, Respiratory Symptoms and Chronic Bronchitis (INSEARCH). The researcher studied both urban and rural population of Ahmedabad district, in which Ahmedabad Municipal Corporation (AMC) has 55 yards. The objective of the study was (1) to find differences in the epidemiology of
Asthma & chronic bronchitis, (2) to find the national median (or mean) prevalence of Asthma and arrive at national disease burden. (3) To find the population prevalence of chronic non-specific chronic respiratory symptoms and of chronic bronchitis. (4) to assess the influence of exposures to tobacco smoking, ETS and combustion of solid fuels, and other risk factors, on the prevalence of both Asthma and chronic bronchitis. Both urban and rural population of Ahmedabad district was studied. Ahmedabad Municipal Corporation (AMC) has 55 wards. The rural population of Sanand Taluka of Ahmedabad district has 71 villages. To include a sample of about 15,000; 35% i.e. 5000 adults in urban (AMC) and 10,000 adults in the Sanand Taluka of Ahmedabad rural district were studied. In urban sample, of the 55, AMC, following 21 wards and areas were selected randomly. One hundred households were visited from each ward. The total samples interviewed were 6074. Rural sample consisted of 71 villages, out of which 41 were studied. The total samples interviewed were 12013. It was concluded that the prevalence of Asthma was seen in 2.05% of the total individuals interviewed. The incidence of Asthma was more common amongst males. Age, Asthma in the family and tobacco smoking are the important risk factors with high odds ratio.

Seasonal Migration and its Impact on Health – A Case Study of Prawn Harvesters in Gujarat (2010), conceptualized by Centre for Enquiry into Health and Allied Themes (CEHAT) and Anandi. The main objective was to study the living conditions of fish prawn workers in Gujarat, their state of health and the extent of health care facilities available to them. Prawn harvesters from the Little Rann of Kutch (LRK), Gujarat, largely members of the Miyana community, are seasonal migrants from along the coast areas of Gujarat. These seasonal migrants face many problems with regard to lack of basic services like food, health and education particularly children among the migrants miss education and immunization. It has been found that these fish prawn workers migrate does not have any schools or
anganwadis, lack drinking water pipelines to electricity. This study attempted to document
the prawn harvesters socio-economic and health condition at temporary settlements along the
coast. There were about 3000 families involved in this activity. It was conducted in 13
temporary settlements which were spread across Rajkot and Surendranagar districts along the
coast of the western India state of Gujarat. The findings suggest that women mainly bear the
double burden of household chores and back breaking work related to prawn harvesting
which also keeps them in direct contact with prawns at coast for long durations. It concludes
that these work conditions and prolonged contact with sea-food are known risk factors for
health conditions including Asthma, skin conditions and poor obstetric outcomes.

Gohil & Priyanshee (2009) carried out a research on preparation and evaluation of
herbal formulation for Bronchial Asthma. In the present investigation the plant materials
(leaves of Adhatoda vasica Nees Linn., fruits of Solanumxanthocarpum Schrad & Wendl and
fruits of Piper longum Linn) were obtained from Government Ayurvedic Udhyan,
Gandhinagar, India. These were then further subjected for authentification and phytochemical
standardization. Capsule and oral aerosol spray was found to significantly decrease the
commonly observed symptoms of Asthma. In conclusion, improvement in symptoms as well
as pulmonary functions in mild to moderate Asthma by capsule and oral aerosol spray
indicated their anti-asthmatic efficacy. However, oral aerosol spray is more potent than
capsule; as it shows better improvement in lung volumes as well as lung flow rates. Thus,
these are used as an add-on/ alternative therapy in the treatment of Asthma.

Pandya (2009) carried out a study of the weed flora of some cultivated fields of
Bharuch District. A number of weeds have medicinal value of great importance. For Fever,
Bronchitis and Asthma: Achyranthes aspera Linn., Phyla nodiflora Linn., Boerhavia diffusa Linn., Eclipta prostrate Linn. Shelmire (1939) In Texas examined a series of 56 weeds for their contact dermatitis by patch-testing their oleoresins. He concluded that most weed sensitive persons, like victims of pollen hay fever and Asthma, show a polyvalent sensitivity. Results show that Tribulus Linn is the powder of seed/fruit is used for cough, Asthma and backache. Lysicarpus Deav. the entire plant parts such as roots, leaves, stem, flower and seeds as per availability are collected, dried and powder is made, 5-10 gms powder and water used in Asthma, bronchitis, pneumonia, rheumatism and fever, 2-3 times a day for a period of 6-8 days. Lysicarpus monilifer (Linn.) powder of root is 1-2 gms orally administered for a period of 5-6 days to cure antidote, cough, leprosy, urinary complaints and Asthma. Eclipta Linn. as a whole plant juice is given one teaspoon for 3-4 days to cure respiratory trouble and Asthma. Decoction of whole plant Trichodesma as 15-20 ml 2 times a day for period of about 8-10 days to cure cough and Asthma. Solanum (Linn.) decoction of whole plant is used consumed orally 3 teaspoon twice a day for a period of 8-10 days to cure Asthma, coughs and sore throat. Blepharis seeds are given in general debility, Asthma, and cough. Phyla, the powder of whole plant are 20 gm with water 2 times a day for a 10 days to cure Asthma, bronchitis, knee joint pain, gonorrhoea, irritation of internal haemorrhages and fever. Boerhavia (Linn.) decoction of whole plant is employed in swellings, Asthma, obesity and general debility. Achyranthes (Linn.) juice of leaves is employed in stomach, piles, fever, calculi, cough, Asthma, bronchitis, dyspsy, jaundice, leucoderma. Acalypha (Linn.) decoction of whole plant is used 2 teaspoon twice a day for a period of 3-5 day to cure bronchitis, pneumonia Asthma, ulcers and rheumatism. Chrozophora (Juss Corr. Benth. Nom. Cons.) root ash use for Asthma and bronchitis. Euphorbia (Linn.) powder of roots are about 15-20 ml of decoction is orally administered, 2 - 3 times a day for a period of 6 - 8 days to cure Asthma, cough and removing
worms in children. The study concluded medicinal utility of the weed species occurring in the Bharuch district by local people is that number of species is 13 and 10.74%.

Biological hazards in different working units of textile mill of Gujarat were surveyed by Saleema et al (2007). The sample consisted of 6500 workers in the mill which worked round the clock i.e. 24 hours of the day. The sampling frame included only male workers of age 19-60 years with 2 years of service and more than 10 years of work experience in a textile mill. First two shifts of workers were selected and a standard questionnaire was used to interview them. Salnaggio (1986) described the word Byssinosis is derived from the Greek word “Bussus” meaning fine Linen or flax. Byssinosis is a respiratory disease of workers of cotton, flax, soft hemp and is classically characterized as shortness of breath; cough and tightness of chest on Monday or the first day of return to work after a time off. Huter (1978) explained that it is also known as strippers, grinders or card room Asthma. The study concluded that Byssinosis usually begins to appear after several years of working exposure. The findings show that 29 workers starting showing its symptoms and out of those 29, 16 belonged to 41-50 age group. This is the time period of declining age and the social responsibilities are at its peak point. Indeed, in the absence of OHS act, no compensation is given to such sick workers mainly due to occupational reasons.

The Tata Institute of Social Sciences (TISS), Mumbai carried out a study of manual scavengers in Gujarat in September (2006). The report states that ninety percent of all manual scavengers have not been provided proper equipment to protect them from faeces-borne illnesses. This includes safety equipment like gloves, masks, boots and/or brooms. In 2006, Gujarat High Court directed the Government to form a safety committee. The purpose was to monitor, use safety equipment and implement high court directives, but result shows that
90% of workers are not getting safety equipment till date. Results show that since sanitation workers and particularly manhole workers are exposed to highly toxic and poisonous substances and gases, they are prone to health hazards and diseases. They spend about 25% of their income on medical expenses. Since their work includes sweeping and cleaning, they are prone to various diseases such as TB, Asthma, cough, backache and infections of the respiratory tract. It concludes that 32% of respondents replied that their relatives who were also sanitation workers had died from such diseases as cancer, tuberculosis and Asthma. In some cases women workers were also expected to remove human excreta without taking any precautions and suffered from various types of illnesses.

Visaria (2003) reported health situation in Gujarat. Deaths due to cough or problems of respiratory system continue to be a major problem in the Gujarat state. Nearly a fifth percentage of deaths fall in this class of ailments. This category includes deaths due to bronchitis and Asthma. Apart from somewhat inadequate performance on the immunization front, two other infant and childhood ailments that are cause of concern are diarrhoea and respiratory tract infections. The disturbing fact is that many of the communicable diseases mainly affect the poor and marginalized population groups. Studies conducted in Surat district have shown that the communicable diseases such as respiratory infections affect the tribal population much more than to the others (Prasad, 2000; Lobo et al, 1999 & Shah, 1997). Equally important but often neglected area of concern is the air pollution, especially indoor air pollution. Findings show that there is a strong relationship between household air pollution and acute respiratory illnesses among young children and Chronic Obstructive Pulmonary Disease (COPD) among adults (Smith, et al. 1999). The study concludes that high incidence of respiratory diseases such as acute respiratory infections, COPD, Asthma and eye problems are associated with exposures to harmful pollutants in the environments.
Punjani and Kumar (2002) conducted a study on traditional medicinal plant remedies to treat cough and Asthmatic disorders in the Aravalli ranges. The objective of the study was a survey of Ethno-medicinal plant resources used by tribes of Banaskantha and Sabarkantha districts, Gujarat state, India. Materials and method applied was Ethno-botanical field survey with local informants was used for the purpose. The first hand information about the plants and plant parts used as traditional remedies against cough and Asthmatic disorders was collected from tribal villages of Aravalli ranges of both the districts during 1999-2001. The data were collected by personal interviews with chieftains of different villages, elderly persons and traditional herbalists (vaidyas) who have knowledge about the therapeutic values of wild plants in different illnesses. Tribal informants were taken to the forest along with identification and collection of plants and their local uses and local names were also recorded. Results show that 50 species of 45 genera belonging to 26 families of angiosperms along with plant parts and their local formulations being used traditionally for the treatment of cough and Asthmatic disorders are reported.

Akthar (1998) examined Byssinosisis and other respiratory symptoms in the workers of a large textile mill of Gujarat. Mill comprised of 7 independent units. The sample taken was 1000 workers working in carding, weaving and finishing sections of the mill. It was a cross-sectional study and the data was collected by simple random sampling method. Out of them 22 were carders, which has high concentration of cotton dust than other sections; main reason being less duration of the exposure. The oldest person in carding section was of 48 years. Whereas, in weaving and finishing sections the oldest persons were of 55 years each. It concluded to reduce the effect of cotton dust, in some mills 1.0% of mineral oil is sprayed on cotton in the hopper bale breaker (Zafar 2000). This helps to reduce the dust and does not interfere with the quality of the yarn, since most of the oil is absorbed before this stage is
reached. On the other hand washing the cotton appears to eliminate the biological activity. Unfortunately, the washed cotton does not process well. But, steaming the cotton can reduce both the dust level and the biological activity of the dust, without altering the quality and thus reducing the chances of suffering from the disease Asthma.

2.2 STUDIES CONDUCTED IN INDIA

Davoodi (2015) studied molecular analysis of Asthma candidate genes in an Indian population from Mysore India. This study was planned to investigate genetics and environmental factors that might contribute to development of Asthma in Indian adults. 200 patients with adult onset Asthma and 400 non-Asthmatic controls with a mean age of 40 years were selected for the study. Information regarding the family history was collected from all the subjects and pedigrees were constructed accordingly; socioeconomic status was determined based on income; serum Levels of IL-4, IL-13 and IFN-gamma were determined by ELISA and five SNPs (C-589T and C-33T of IL-4, G2044A of IL-13, A1902G of IL-4Rα, and A896G of TLR4) were genotyped using Sequenom MassARRAY. The results revealed family history of Asthma in 64% of the cases and 13% of the controls ($p < 0.001$), showing dominant inheritance. Consanguinity was not found as a risk factor. The highest prevalence of having any family history of Asthma was observed in the high class (88.2%); followed by upper middle class (79.4%), lower middle class (60%) and the poor (40%). Median serum level of IFN-gamma was 8.0 pg/ml in Asthmatics and 11.4 pg/ml in controls. IL-13 serum level was 40.0 pg/ml in Asthmatics and 58.25 pg/ml in controls. IL-4 serum level was below the detection level in both patients and controls. The mutant allele of C-589T and C-33T SNPs in the promoter of IL-4 were present in 4% of Asthmatics but absent in the controls. The SNPs of other genes were seen in both Asthmatics and controls. The study concludes that
family history of Asthma was proved to be significantly associated with adult onset Asthma, high SES was a risk factor for developing Asthma which lend support for the hygiene hypothesis, similar concentrations of IFN-gamma and IL-13 in Asthmatics and controls suggest their neutral role in airway inflammation and, possible association between the genetic distribution of C-589T and C-33T SNPs of IL-4 with Asthma in adults from Mysore.

Kumar, Roy & Subitha (2014) investigated prevalence of Bronchial Asthma and its associated factors among school children in urban Puducherry, India. The main objective of the study is to assess the prevalence and associated factors of Bronchial Asthma among school children. A cross-sectional study was conducted among 263 children studying in the 8th, 9th, and 10th standard using the modified ‘International Study on Allergy and Asthma in Childhood’ questionnaire in Urban Puducherry. Data on associated factors that include family history of Asthma, type of fuel used for cooking, placement of kitchen in the house, number of windows in sleeping room, pet animals, smoking among family members, birth order, and smoke outlet were collected. Data were analyzed by univariate analysis and expressed in proportion or percentages. The results show that the prevalence of Bronchial Asthma was found to be 5.3%, of which 4.2% had current episode of Asthma during the last 1-year period. About 72.7% of the current Asthmatics had cold or rhinitis and 54.5% each had itching or rashes and nocturnal dry cough. Prevalence is more among the 12-13 years age group (6.5%) compared to the 14-16 years age group (3.6%). Boys (5.4%) and girls (5.2%) had comparable prevalence rates. The prevalence was significantly more among those with a family history of Asthma, having smoking habits in any of the family members, and the absence of smoke outlet in the house (P < 0.05). It concluded that Bronchial Asthma is an important health problem among children in urban Puducherry. Intervention on exposure to passive smoking
and provision of smoke outlets may help to reduce the burden of disease at the community level.

Saguna (2014) carried a study on prevalence and risk factors of Acute Respiratory Infection (ARI) among school children in Coastal South India. The study was aimed to assess the prevalence and certain risk factors associated with ARI among school children. This cross-sectional study was conducted among 397 school children age group of 5-14 years in the seven schools of rural Puducherry, India. Data on socio-demographic characteristics and associated risk factors of ARI were collected by interview using pre-tested structured questionnaire. Data was analyzed by univariate and multiple logistic regression analysis. The results reveal that overall, 51.1% (203) of the subjects had at least one symptom of ARI in the preceding 2 weeks. The manifestations of ARI included allergic rhinitis (183, 46.1%), dry cough (75, 18.9%), throat pain and fever (54, 13.6%), wheezing (39, 9.8%) and ear discharge (28, 7.1%). About half of the subjects with ARI (52.2%) belonged to 5-9 year age group and females (52.3%). Mother's education, family history of allergic disorder and Asthma, absence of smoke outlet in kitchen and windows in sleeping room were found to be significantly associated with ARI in univariate analysis ($P < 0.05$). Multiple logistic regression analysis showed that 5-9 years age group (odds ratio [OR] = 1.7), family history of allergic disorder (OR = 9.6) and Asthma (OR = 5.2), presence of smoke outlet in kitchen (OR = 0.5), absence of windows in sleeping room (OR = 3.0) were found to have an independent association with the ARI. About 29.6% (60) of the subjects with ARI had accessed health care facility for treatment. The study concludes that ARI among school children is an important health problem. Interventions like provision of smoke outlets and windows in sleeping room may help in reduction of burden of ARI.
Agrawal, Pearce & Ebrahim (2013) studied the prevalence and risk factors for self-reported Asthma in an adult Indian population: A cross-sectional survey. The prevalence of self-reported Asthma in adult Indians and several risk factors influencing the disease prevalence were studied. Analysis is based on 99,574 women and 56,742 men aged 20–49 years included in India's third National Family Health Survey (NFHS-3), 2005–2006. Multiple logistic regression analysis was used to estimate the prevalence odds ratios for Asthma, adjusting for various risk factors. The prevalence of self-reported Asthma was 1.8% (95% CI 1.6–2.0) among men and 1.9% (95% CI 1.8–2.0) among women, with higher rates in rural than in urban areas and marked geographic differences. After adjustment for known Asthma risk factors, women were 1.2 times more likely to have Asthma than men. It was concluded that daily/weekly consumption of milk/milk products, green leafy vegetables and fruits were associated with a lower Asthma risk, whereas consumption of chicken/meat, a lower body mass index (BMI; <16 kg/m^2, OR 2.08, 95% CI 1.73–2.50) as well as a higher BMI (>30 kg/m^2, OR 1.67, 95% CI 1.36–2.06), current tobacco smoking (OR 1.30, 95% CI 1.12–1.50) and ever use of alcohol (OR 1.21, 95% CI 1.05–1.39) were associated with an increased Asthma risk. There are wide regional variations in the prevalence of Asthma in India. With the exception of the findings for BMI, however, most of the associations of Asthma with the risk factors are relatively weak and account for only a small proportion of cases.

Anand, Kalpana & Vijayalakshmi (2013) conducted a research on design and implementation of a fuzzy expert system for detecting and estimating the level of Asthma and Chronic Obstructive Pulmonary Disease (COPD). The work carried out places a great deal of importance in the way the lung functions and also in detecting problems associated with lungs primarily with respect to Asthma and COPD. A fuzzy expert system has been designed
that takes into account details of various patients and identifies the problem the patient is likely to encounter. Besides, this extent of severity of the problem can also be assessed. In order to reduce the complexity of the overall system, several subsystems with independent intelligent controllers have been designed. Besides, sensitivity analysis has also been carried out to test the extent of relevance of specific inputs. The study concludes that the rules provided in the design of fuzzy expert system are not exhaustive, yet the system gives a good insight about the various pulmonary diseases viz. Asthma; by predicting its severity nearly equivalent to that of a medical expert. This system also provides a comprehensive insight into the functioning of a lung management system. Suggestions are provided to the patient from time to time on ways and means of reducing the severity of Asthma and COPD and in some cases eliminating the same together.

Kant (2013) studied socio-economic dynamics of Asthma in which he quoted the research by Davoodi & colleagues about the association between Socio-Economic Status (SES) and family history of Asthma in Mysore, India. The study indicated prevalence of having any family history of Asthma in 88.2% high class group, 79.4% in upper middle class, 60% in lower middle class and 40% in the low class group and concluded that high SES was a risk factor for developing Asthma. Results reveal that Asthma was diagnosed in 2.28, 1.69, 2.05 and 3.47% respondents, respectively at Chandigarh, Delhi, Kanpur and Bangalore, with overall incidence of 2.38% by the Asthma Epidemiology Study Group. The study concludes that female sex, advancing age, usual residence in urban area, lower SES, history suggestive of atopy, history of Asthma in a first degree relative, and all forms of tobacco smoking were associated with significantly higher odds of having Asthma.
A study of Bronchial Asthma with special reference to menstruation was carried out by Raj & Neelima (2013). The sample size of the study was 100 asthmatic female with age group of 15 – 45 years. Pre-planned questionnaire were made to be filled up by the samples to know the menstrual linked Asthma. Spirometric examination of all patients was done. Eighty patients were having airflow obstruction assessed by pulmonary function testing (PFT). Results indicate that 34% of patients complain deterioration of Asthma linked with their menstrual cycle, whereas 66% patients didn’t give the history of menstrual linked Asthma. It is concluded that severity of disease was significant high, the airway obstruction was much higher and total duration of illness was more in patients who complained menstrual linked Asthma. Therefore, it was also noticed that patients with menstrual linked Asthma had deterioration of Asthma related to change of specific season – winter and suffer from symptoms of Asthma especially during their premenstrual week.

Brashier et al (2012) studied prevalence of self-reported respiratory symptoms, Asthma and chronic Bronchitis in slum area of a rapidly developing Indian city. The aim of the study was to investigate the prevalence of Asthma and chronic Bronchitis symptoms and associated risk-factors in slum habitats of Pune city. 7062 adult slum-dwellers living in 12 slums of Pune city were cross-sectionally interviewed by local healthcare workers with respiratory health questionnaire which were designed using respiratory symptoms of validated European Community Respiratory Health Survey (ECRHS-II) questionnaire and International Union against Tuberculosis and Lung Disease (IUATLD) bronchial symptoms questionnaire. The result shows that the overall prevalence of self-reported Asthma symptoms was 10% (18 - 40 years: 6.5%; >40 years: 13.5%). The overall prevalence of chronic Bronchitis was 8.5% [18 - 40 years: 7% (males: 7%, females: 7%); >40 years: 10% (males: 10%, females: 10%)]. Increasing age (p = 0.00), female gender (p = 0.001),
unemployment (0.00) current smoking (p = 0.00) and ex-smoking (p = 0.004) emerged as significant risk factor for Asthma. While, ex-smoking (p = 0.004) and low-education status (p = 0.00) emerged as significant risk factors for chronic bronchitis. The study concludes that in slums reporting of Asthma and chronic Bronchitis, symptoms were much higher than what has been reported earlier from India. Asthma was commonly seen in females, old age, unemployed and ever-smokers. While chronic Bronchitis was commonly seen in ex-smokers and illiterate subjects. Chronic Bronchitis was equally distributed amongst male and females, despite 0% prevalence of smoking in females.

Greenpeace (2012) conducted a study on Coal Kills - An assessment of death and disease caused by India’s dirtiest energy source. The sample in this study is derived from a database of coal-fired power plants compiled by Urban Emissions for the operational period of 2011-12 and takes into account a total of 111 coal-fired power plants. The pollution impact generated by this fleet of coal plants is that it overall results into an estimated annual health impact and health costs as a result of pollution. Therefore, the effect of Asthma attacks on health impacts is 20.9 million. Epidemiological studies conducted in India (Delhi and Chennai) under the Public Health and Air Pollution in Asia (PHAP) programme also highlighted the linkages between hospital admissions and Asthma cases. The findings suggest that many lives of the affected could be saved, millions of Asthma attacks, heart attacks and associated costs of the society could be avoided with proper use of cleaner fuels, stricter emission standards, installation and use of the technologies required for achieving considerable reductions in these pollutants. The results of this analysis show that coal is taking a heavy toll on human life across large parts of the country. In 2011-2012, emissions from Indian coal plants resulted in more than 20 million Asthma cases from exposure to pollution. The study concludes that the largest impact of these emissions was felt over the
states of Delhi, Haryana, Maharashtra, Madhya Pradesh, Chhattisgarh, Indo-Gangetic plain and most of central-east India. The global burden of disease study for 2010 reported an all-cause mortality of 210-320 per 1000 male adults and 140-220 per 1000 female adults for India (Wang et al., 2012). This was adjusted as per the mortality rate due to lower and upper respiratory illnesses (including bronchitis and Asthma) and cardio vascular diseases.

Kotwani & Chhabra (2012) surveyed the effect of patient education and standard treatment guidelines on Asthma control: An intervention trial. The objective of the study was to evaluate the effect of standard treatment guidelines and Asthma education programme on Asthma control among patients enrolled from a referral health facility of Delhi in India. Fifty patients who visited the health facility first time for treatment of Asthma were enrolled after confirming the diagnosis of Asthma by symptoms and reversible spirometry. Patients were interviewed at baseline using three researcher - administered questionnaires - quality of Asthma Management Questionnaire, Asthma Control Questionnaire (ACQ) and Asthma Knowledge Questionnaire (AKQ). All patients were given pharmacotherapy according to standard treatment guidelines. In addition, every alternate patient was also given a face-to-face educational intervention. Patients were followed up at 2, 4, 8 and 12 weeks. The ACQ was used at each visit, and AKQ were reassessed at the twelfth week. The paired t-test was used to detect significant changes in various domains of Asthma control. The results show that the knowledge of Asthma among patients and the care provided by previous health-care providers were found to be poor at baseline assessment. The application of standard treatment guidelines improved Asthma control by the second week and the changes became significant by the fourth week, which persisted till the twelfth week (p <0.0001). Educational intervention led to improvements in knowledge in several domains. Improvements in Asthma
symptoms began earlier among those who had additional educational intervention. The study concludes that standard treatment guidelines and Asthma education improved Asthma control.

Malik, Kumar & Frieri (2012) studied minimal differences in the prevalence of Asthma in the urban and rural environment. Multiple risk factors can be modified to decrease Asthma incidence. It is important to understand early risks to decrease exposure to harmful conditions in the environment that can trigger Asthma which may not be clinically evident in children until they reach adulthood. A retrospective literature review of articles on the prevalence of Asthma in the urban versus rural environment was initiated in order to understand the effect of the environment on Asthma. Result shows that the urban-living effect is a global problem in the face of growing population, industrialization and pollution. The socioeconomic dichotomy in the urban versus rural environment also affects access and quality of health care. Articles reviewed had differences in the urban versus rural prevalence of Asthma. However, further analysis of specific risk factors and socioeconomic trends that increased susceptibility to Asthma was the same in these studies. Some rural areas may have similar environmental and socioeconomic issues that place them at the same risk for the development of Asthma as their urban counterparts. Urban locations generally tend to have the prototype environment that can lead to the predisposition of Asthma. Ultimately, it concluded that the incidence of Asthma can be decreased if these environmental and socioeconomic issues are addressed. However, every effort is needed from the level of the individual to the community at large.

Anuradha et al (2011) conducted epidemiological study on Bronchial Asthma. The present study was conducted to estimate the prevalence of different types of Bronchial
Asthma and define their risk with age, gender, type of cooking fuel, dwelling area, occupation & income, education, dietary habit, family history, atopic dermatitis, smoking and alcoholic habit, Diabetes in Visakhapatnam district, North coastal Andhra Pradesh and South India. One hundred and twenty patients from Hospital for Chest and Communicable Diseases were included using a well designed questionnaire, clinical examination by physician which was carried out from August 2008 to March 2009. The key questions were related to the type of Asthma, family history, presence of Atopic Dermatitis and Diabetes, information on smoking and alcoholic habits, domestic cooking fuel used dwelling area, age, religion, socio-economic status and age of onset of disease. Out of 120 subjects surveyed, 34 were females and 86 were males. The results of the study are that the type of Asthma is distributed as Cough Variant Asthma (50.83%), Nocturnal Asthma (17.5%), Allergic Asthma (20.83%) and Occupational Asthma (10.83%). Regarding family history, 30.16% showed genetic predisposition irrespective of sex. Asthmatics, 20% were having Atopic Dermatitis, 25% were smokers, 20% were alcoholics and 44.76% were with the Diabetics. Advancing age, usual residence in urban area, lower socio-economic status was associated with significantly higher odds of having Asthma. The data indicates the urban people, labour, illiterates, low income people are more affected because of their financial status. The study concludes that the increased number of Asthma people is mainly due to the environmental pollution which includes the factors like establishment of more industries, construction of apartments without plantation. The present study shows that Asthma is an important public health issue in urban area. It showed that Cough Variant Asthma, Diabetes and smoking habit increases the incidence of Asthma attacks. In order to attain a better quality of life in a chronic disease condition like Asthma, one needs to be aware of its aggravating factors.
Effect of Pranayama on chronic Bronchial Asthma was studied by Ashfaque & Kaplana (2011). The aim of the study was to measure the effect of Pranayama or respiratory physiotherapy breathing exercises on chronic Bronchial Asthma. The primary objectives were: 1) Effect of Pranayama or respiratory physiotherapy breathing exercises on Pulmonary functions and Peak Expiratory Flow Rate (PEFR) in chronic Bronchial Asthma. 2) Effect of Pranayama or respiratory physiotherapy breathing exercises on prevention of acute exacerbation in chronic Bronchial Asthma. 3) Effect of Pranayama or respiratory physiotherapy breathing exercises on improvement of six minute walk test and breath holding time in chronic Bronchial Asthma. This study was designed to test the hypothesis that Pranayama was superior to respiratory physiotherapy breathing exercises in the improvement of pulmonary functions, allergy and inflammation in chronic Bronchial Asthma. This study investigated the hypothesis that breathing techniques such as Pranayama was more beneficial than respiratory physiotherapy exercises, on having favorable effects on pulmonary functions, Asthma exacerbations, dyspnoea scores etc. The results show that six weeks of Pranayama produced statistically improvement in comparison with sex, age and Asthma duration matched controls. The study concluded that Pranayama reduces inflammation of Asthma and has shown to decrease atopy & allergy in chronic Asthmatics.

Guttikunda and Jawahar (2011) studied urban air pollution analysis in India. Air quality monitoring from the Central Pollution Control Board (Delhi, India) and hospital admissions records from cities across India, found that the city of Delhi was declared the "Asthma Capital" of India. The six cities selected for this study are Pune (Maharashtra); Chennai (Tamil Nadu); Indore (Madhya Pradesh); and Ahmedabad, Rajkot, and Surat (Gujarat). For this study, data from year 2008 is extracted for the grid cells covering the city boundaries of Pune, Chennai, Indore, Ahmedabad, Surat, and Rajkot. The study domain
includes geographical conditions, population, general source characteristics from industrial & power generation, vehicle and road statistics. The domain are designated at 44 km x 44 km for Chennai, Ahmedabad, and Surat; 32 km x 32 km for Pune and Indore; 24 km x 24 km for Rajkot - the smallest of the six cities. The domains selected in this study are typically larger than the main district areas, surrounding satellite locations with significant industrial loads to account for the non-transport sector, which is often neglected in the in-city based observations and analysis. Pune City as a domain, the satellite city of Pimpri Chinchwad is included, for the Ahmedabad domain, the city of Gandhinagar is included, and for the Chennai domain, all the neighboring industrial estates with brick kiln clusters (at least 20-30 km away from main district area) are included. The four power plants (two in Chennai and two Ahmedabad) also contribute to the local pollution. The study concludes that consequences of exposure to these pollutants range from premature mortality due to aggravated morbidity effects such as Asthma, chronic bronchitis, and oxygen deficiency in blood. The average dose response functions for morbidity end points for Asthma attacks are dose response function ($\beta$) – 0.002900, willingness to pay (INR) – 1,000 & willingness to pay (USD) – 22. Estimated mortality and morbidity due to air pollution for 2010 recorded premature deaths due Asthma attacks (million) in Ahmedabad, Surat and Rajkot are 1.7, 0.4 and 0.1 respectively.

Lahaye et al (2011) investigated psychological, social and school implications of Asthma: A comparison of Belgian French-speaking children having Asthma with healthy children. The present study aimed to explore the psychosocial implications of Asthma among Belgian French-speaking children. Ninety-nine parents of children having Asthma (Mean=11.40, SD=2.35) and 102 parents of children without Asthma (Mean=11.25, SD=.81) participated in the study. Parents filled in the Child Behaviour Checklist and a demographic
questionnaire. Two-way multivariate was performed as analyses of covariance (ANCOVA) with the groups (Asthma & control) as fixed factor and gender & parents’ educational level as covariates. The results of the study show that children having Asthma were assessed by their parents as having more internalizing, social and attention problems and as having less competence in doing activities (e.g., sports, hobbies, jobs) than their healthy peers. Significant differences also appeared between genders’ for attention problems, anxiety/Depression, activities, social and school competences, indicating that boys were more vulnerable to psychological and social difficulties than girls but they had better school competences than girls. Results also show no difference for psychological, social, and school adjustment between children who controlled and partly controlled their Asthma. These findings emphasize the importance of screening children who would be at risk for having psychosocial problems and developing multidisciplinary interventions for children with Asthma and for their families.

A study on Prenatal or early-life exposure to antibiotics and risk of childhood Asthma was carried out by Murk, Risnes & Bracken (2011) with an objective to evaluate the evidence of association between antibiotic exposure during pregnancy or in the first year of life and risk of childhood Asthma. The methods used were that, PubMed was systematically searched for studies published between 1950 and July 1, 2010. Those that assessed associations between antibiotic exposure during pregnancy or in the first year of life and Asthma at ages 0 to 18 years (for pregnancy exposures) or ages 3 to 18 years (for first-year-of-life exposures) were included. Validity was assessed according to study design, age at Asthma diagnosis, adjustment for respiratory infections, and consultation rates. Results show that for exposure in the first year of life, the pooled odds ratio (OR) for all studies (N = 20) was 1.52 (95% confidence interval [CI]: 1.30–1.77). Retrospective studies had the highest pooled risk
estimate for Asthma (OR: 2.04 [95% CI: 1.83–2.27]; n = 8) compared with database and prospective studies (OR: 1.25 [95% CI: 1.08–1.45]; n = 12). Risk estimates for studies that adjusted for respiratory infections (pooled OR: 1.16 [95% CI: 1.08–1.25]; n = 5) or later Asthma onset (pooled OR for Asthma at or after 2 years: OR: 1.16 [95% CI: 1.06–1.25]; n = 3) were weaker but remained significant. For exposure during pregnancy (n = 3 studies), the pooled OR was 1.24 (95% CI: 1.02–1.50). The conclusions found were that antibiotics seem to slightly increase the risk of childhood Asthma. Reverse causality & protopathic bias seem to be possible confounders for this relationship.

Nurmatov (2011) investigated on nutrients and foods for the primary prevention of Asthma and allergy. The primary objective was to investigate the evidence that nutrient and food intake modifies the risk of children developing allergy. The methods conducted were systematically search of 11 databases. Studies were critically appraised, and meta-analyses were undertaken. The result shows 62 identified eligible reports. There were no randomized controlled trials. Studies used cohort (n = 21), case-control (n = 15), or cross-sectional (n = 26) designs. All studies were judged to be at moderate to substantial risk of bias. Meta-analysis revealed that serum vitamin A was lower in children with Asthma compared with controls (odds ratio [OR], 0.25; 95% CI, 0.10-0.40). Meta-analyses also showed that high maternal dietary vitamin D and E intakes during pregnancy were protective for the development of wheezing outcomes (OR, 0.56, 95% CI, 0.42-0.73; and OR, 0.68, 95% CI, 0.52-0.88, respectively). Adherence to a Mediterranean diet was protective for persistent wheeze (OR, 0.22; 95% CI, 0.08-0.58) and atopy (OR, 0.55; 95% CI, 0.31-0.97). Seventeen of twenty-two fruit and vegetable studies reported beneficial associations with Asthma and allergic outcomes. Results were not supportive for other allergic outcomes for these vitamins or nutrients, or for any outcomes in relation to vitamin C and selenium. It concludes that the
available epidemiologic evidence is weak but nonetheless supportive with respect to vitamins A, D, and E; zinc; fruits and vegetables; and a Mediterranean diet for the prevention of Asthma.

Annual Report (2010-2011) of Department of Health Research, conducted a 12-centre study on prevalence and aetiology of Asthma using a standardized questionnaire, surveyed a total of 169575 individuals above 15 years of age (60764 urban and 108811 rural; 85105 men and 84470 women). In all, 8990 individuals (5.3%) had a first degree relative with history suggestive of Bronchial Asthma, more commonly in men – the male: female ratio was 1.9 for the rural and 1.2 for urban subject. The pooled prevalence of Asthma (using the questionnaire definition) across the twelve centres was 2.05% (2.28% in rural and 1.64% in urban areas). There were wide variations across the different centres. Prevalence was quite low in urban Secunderabad (0.37%) and rural Mumbai (0.74%), and relatively high at Kolkata (rural 4.52% and urban 5.52%) and rural Trivandrum (4.45%). Multiple regression models revealed that study population at individual centres, age, family history of Asthma and tobacco smoking were consistently associated with higher odds of Asthma.

Parasuramalu et al (2010) studied prevalence of Bronchial Asthma and its association with smoking habits among adult population in rural area. A cross-sectional study was conducted in the rural field practice area of Kempegowda Institute of Medical Science, Bangalore. A total of 3194 adult individuals (18-70 years) were selected from 30 villages (clusters) using a cluster-sampling technique. The data were collected by the house surgeons who were trained for the uniformity and completeness of the data collection. The samples were interviewed with a standardized translated Kannada version questionnaire. Individuals with symptoms suggestive of Asthma were subjected for clinical examination for the
diagnosis of Asthma. Among the 3194 respondents, 1518 (47.5%) were males and 1676 (52.5%) were females. Smoking was assessed in three classes: current smokers, ex-smokers & non-smokers. Results show that the prevalence of Asthma was higher among those reporting a history of current smoking. Among current smokers, the number of cigarettes/bidis/hookah smoked daily did not differ (P>0.05) between individuals without Asthma and with Asthma, whereas the mean number of years of smoking did differ (P<0.001). The study concludes that there was a significant association between tobacco and Bronchial Asthma. Therefore, Tobacco smoking is a risk factor for Bronchial Asthma.

Anandan and Nurmatov (2009) examined that, ‘Is the prevalence of Asthma declining? Systematic review of epidemiological studies’. The main objective was to determine whether the prevalence of Asthma is declining worldwide. A systematic search of EMBASE, Medline, Web of Science and Google Scholar, for high quality reports of cohort studies, repeat cross-sectional studies was undertaken. Analyses of routine healthcare datasets to examine international trends in Asthma prevalence in children and adults for the period 1990-2008 was also carried out in the study. The results show that there were 48 full reports of studies that satisfied the inclusion criteria. The large volume of data identified clearly indicate that there are, at present, no overall signs of a declining trend in Asthma prevalence; on the contrary, Asthma prevalence is in many parts of the world still increasing. The reductions in emergency healthcare utilization being reported in some economically developed countries most probably reflect improvements in quality of care. It concludes that there remain major gaps in the literature on Asthma trends in relation to Africa and parts of Asia. There is no overall global downward trend in the prevalence of Asthma. Healthcare planners will for the foreseeable future, therefore, need to continue with high levels of anticipated expenditure in relation to provision of Asthma care.
Mehta, Sequeira, & Sahoo (2009) examined Bronchial Asthma and dental caries risk: Results from a case control study. The objective of the study was assessing the dental caries status of Asthmatic patients in the age group of 11-25 years and to examine the possible association of these conditions to various aspects of Bronchial Asthma and its management. It was conducted on 80 Asthmatic patients receiving treatment at the Kasturba Medical College (KMC) and hospital, Mangalore, India. They were examined for their caries status and the scores were compared with an age, sex and socioeconomic status matched group of 80 non-Asthmatic patients as controls. The mean age of Asthmatics was 17.4 (± 4.3) years and mean duration of Asthma was 17.69 (± 7.66) months. The results showed a significantly higher prevalence of caries among asthmatic patients as compared to the matched control group as well as a positive correlation between the duration of Asthma and the caries indices. The study concludes that there is a need to create awareness among dental practitioners regarding the increased caries risk of asthmatic patients.

Pal (2009) studied prevalence of Bronchial Asthma in Indian children. The objective of the study was to assess time trends and the overall prevalence rate of Bronchial Asthma among Indian children. Literature search for data sources was done through an extensive search in indexed literatures and website-based population survey reports. Fifteen epidemiological studies were identified on the development of Asthma in Indian children from 300 potentially relevant articles. A broad criterion to define both allergic and non-allergic descriptions of Asthma in Indian children was formed. Moreover, in the absence of universally accepted criteria by reporting of prevalence by researchers, weighted average data was considered during calculations of prevalence rates, irrespective of the criteria for diagnosis. Statistical analyses used were mean and median. The results show wide differences in samples, primary outcome variables, lack of consistency in age category, rural–urban
variation, criteria for positive diagnosis, and study instruments confounded the outcome variables. The mean prevalence was 7.24 ± SD 5.42. The median prevalence was 4.75% [with IQR = 2.65 - 12.35%]. Overall weighted mean prevalence was found to be 2.74. Childhood Asthma among children 13 – 14 years of age was lower than the younger children (6 – 7 years of age). Urban and male predominance with wide inter-regional variation in prevalence was observed. The study concludes that the burden of Bronchial Asthma in Indian children is higher than was previously understood.

Vijayakumar et al (2009) conducted a perspective study of Asthma and its control in Assam (India). The main objective of the study is to collect data about the profile of the Asthmatic patients in Assam and thereby have a comprehensive knowledge of the factors influencing the Asthmatic patients of the state and their medication pattern. The method used was MEDLINE (1996 to current literature) and CINAHL DOAJ pub med databases. The study was conducted through a set of structured and non-structured questionnaires targeted on the Asthmatic patients belonging to the rural and urban areas of Assam, during the month of Dec 2006 to July 2007. One hundred and thirty eight cases were studied in Gauwathi medical college & hospital located in Bhangagarh, Assam in India. The demographic characteristics, a factor in 138 patients with Asthma with allergic rhinitis (cases) gives the detail profile of Asthmatic patient’s distribution of Assam as classified on the basis of age and sex. It is evident from the study results that males (66%) are more prone to Asthma as compared to the females (34%). Another striking feature that emerged from this survey is the maximum prevalence of Asthma in the age group of 20-30 years followed by infants belonging to the age group of seven (0.05%); 0-10years among both male and female populations of Assam. The high incidence of Asthma in the age group of 20-30 years may probably be due to the allergy arising out of sudden exposure to dust and pollen which the children face while
playing and going to the school. The rural females in the age group of 30-40 years are more prone to Asthma than urban females in the same age group may be due to sex differentiation among the tribal population of the state. It was concluded that pharmacists should educate the Asthmatics how to use inhalers considering growing menace of Asthma in the state. Safer drugs should be produced in the form of aerosol so that easy administration by the Asthmatic patients and physicians of the state is possible for curing Asthma. The health centers should be more equipped with the medicines to cure Asthma.

Prasad et al (2007), administered a questionnaire based study of Bronchial Asthma in rural children of Lucknow. This study estimated the prevalence of Asthma in rural children in 5-14 years of age. This cross-sectional study was carried out from November 2001 to October 2002. The questionnaire based study was carried out in a village Mati of Lucknow district which has a population of 2055, including the population in the age group of 5-14 years was 758 (36.9%). Out of the total children 690 (91.0%) were interviewed. A house-to-house visit was made and a postgraduate medical student recorded the information by questioning the children and parent on a specially designed questionnaire based on American Thoracic Society and British Medical Research Council; presented a priori by Chhabra et al (1998). Total population surveyed under this age group was 758. The key questions were related to complaints of recurrent wheezing in the past, in the last 1-year and also wheezing exclusively induced by exercise or cold. Overall prevalence of Bronchial Asthma was recorded as 7.7%. The prevalence of current Asthma was 6.1% and past Asthma was reported in 0.6%. Exclusively exercise-induced Asthma was 0.6% and cold induced Asthma was 0.4%. A significant association was found between the prevalence of Asthma and a positive family history of Asthma/ allergic rhinitis (p=0). No significant association was found between prevalence of Asthma with presence of smoker in the families. In conclusion, the prevalence
of Bronchial Asthma was 7.7% in rural children of 5-14 years age group. Our findings suggest that Asthma may be more common than previously believed. In this study family history of Asthma/Rhinitis emerged as a significant risk factor for Bronchial Asthma.

Gupta and Mangal (2006) examined prevalence and risk factors for Bronchial Asthma in adults in Jaipur district of Rajasthan, India. A field study was undertaken to estimate prevalence of Bronchial Asthma and to define the risk factors influencing the disease prevalence in Jaipur district of the state using a validated questionnaire. Besides demographic data, information on smoking habits, domestic cooking fuel used, atopic symptoms and family history suggestive of Asthma were also collected. Multivariate logistic regression analysis was performed to calculate odds ratio of various potential risk factors. Data from 8863 respondents (5010 men, 3853 women) were analysed after excluding children below 15 years of age. One or more respiratory symptoms were present in 5.3% of the subjects. Asthma was diagnosed in 1.86%, 1.44%, 0.51% and 0.38% of the rural male & female and urban male & female respondents respectively, with an overall prevalence of 0.96%. History of atopy in self and/or history of atopy/Asthma in the first-degree relative were found to be the most important risk factor. Advancing age, usual residence in rural area and tobacco smoking, especially hookah smoking, were also associated with significantly higher odds of having Asthma.

Aggarwal et al (2005) carried out a study on the prevalence and risk factors for Bronchial Asthma in Indian adults: A multicentre study. The main objective was to estimate prevalence of Bronchial Asthma in different regions of India and to define risk factors influencing disease prevalence. A field study was conducted at Chandigarh, Delhi, Kanpur and Bangalore through a two stage stratified (urban/rural) sampling and uniform
methodology using a previously validated questionnaire. Asthma was diagnosed if the respondent answered affirmatively both to (1) whistling sound from chest, or chest tightness, or breathlessness in morning and (2) having suffered from Asthma, or having an attack of Asthma in the past 12 months, or using bronchodilators. Besides demographic data, information on smoking habits, domestic cooking fuel used, atopic symptoms, and family history suggestive of Asthma was also collected. Univariate and multivariate logistic regression modeling was performed to calculate odds ratio of various potential risk factors. The results show that data from 73605 respondents (37682 men, 35923 women) were analyzed. One or more respiratory symptoms were present in 4.3%-10.5% subjects. Asthma was diagnosed in 2.28%, 1.69%, 2.05 and 3.47% respondents respectively at Chandigarh, Delhi, Kanpur and Bangalore, with overall prevalence of 2.38%. Female sex, advancing age, usual residence in urban area, lower socio-economic status, history suggestive of atopy, history of Asthma in a first degree relative, and all forms of tobacco smoking were associated with significantly higher odds of having Asthma. It concludes prevalence estimates of Asthma in adults in this study, although lower than several previously reported figures, point to a high overall national burden of disease.

Ramankumar & Aparajita (2004) conducted a study on respiratory disease burden in rural India by utilizing data on survey of cause of death (rural). The data was mainly extracted from the survey of causes of death (rural); annual reports of Registrar General of India (RGI), Census of India, 2001, National Family Health Survey (NFHS) I & II and various community based studies. Trend of Tuberculosis (TB), Asthma & Bronchitis and pneumonia were calculated by five-yearly moving averages period of 1966-94, rank-wise distribution of leading cause of death during 1971-91 was reviewed. Distribution of housing, source of cooking fuel was studied in relation to household pollution and state wise age-
standardized prevalence rates of Asthma were also calculated. The analysis shows that poverty and unhealthy environment are strongly related to the respiratory disorders. Bronchitis and Asthma were recorded as leading cause, pneumonia and tuberculosis of the lungs ranked one of the five causes of deaths in rural India. Results reveal the respiratory disorders have shown a reduction from 24.7 to 19.2 during the study period. Asthma and Bronchitis prevalence rates in Karnataka, Gujarat, Haryana, Uttar Pradesh, Kerala and Madhya Pradesh are above national average. TB prevalence is high in Madhya Pradesh, Uttar Pradesh and Gujarat where Tamilnadu and Maharashtra recorded lowest prevalence. The study concluded that though national wide health plans have succeeded in reducing fatality of respiratory disease (Asthma) to a certain extent; there is however, a great need for improved and effective area-specific health programs and social & economic development are mandatory in rural areas to achieve the desired health goals.

Chakravarthy (2002) investigated the prevalence of Asthma in urban and rural children in Tamilnadu. The study aimed to estimate the prevalence of Asthma in children under 12 years of age and to study possible differences in the prevalence of childhood Asthma in urban and rural areas of Tamilnadu. A total of 584 children from Chennai and 271 children from 25 villages around Chennai formed the urban and rural groups, respectively. From November 1999 to February 2000, data were collected using a simplified version of the ISAAC questionnaire, which was administered by trained students. Symptoms suggestive of Asthma or hyperactive airways disease in children were recorded by questioning the parents. The results were analyzed separately for children 0-5 and 6-12 years of age. The study concludes that out of the 855 children studied, the overall prevalence of breathing difficulty (including Asthma) was 18% and the prevalence of diagnosed Asthma was 5%. Twenty-two cent of urban and 9% of rural children 6-12 years of age reported breathing difficulty ‘at any
time in the past’ (p<0.01). A significantly higher proportion of 6-12 year old urban children also reported nocturnal dry cough. Urban children reported recent wheeze more often than rural children. Symptoms suggestive of Asthma were present in 18% of children under 12 years of age. The prevalence of diagnosed childhood Asthma was about 5% in both urban and rural areas, the prevalence of ‘breathing difficulty’ and nocturnal cough was significantly higher among urban children in the age group of 6-12 years. Thus, the study concludes that children living in urban areas report ‘recent wheeze’ more often than rural children.

2.3 STUDIES CONDUCTED IN WORLD

Klinnert et al (2015) studied a multimethod assessment of behavioral and emotional adjustment in children with Asthma. The objective of the study was to examine behavioral adjustment and emotion regulation among 6-year-old children with Asthma and a group of healthy controls. Subjects were 81 children with Asthma and 22 healthy controls. Asthma and allergy statuses were confirmed by objective measures. Emotional and behavioral functioning was assessed through parent report, child interview, and child participation in an emotional regulation paradigm. Result shows that the maternal report revealed more internalizing and total behavior problems for children with Asthma compared to controls. Child interview and behavioral observations of emotion regulation yielded no differences between groups. Severity of Asthma was related to increased emotional difficulties by clinician interview and observation but not by maternal report. The study concludes two groups of children with Asthma who have psychological difficulties include those with increased anxiety and those with poor emotion regulation and more Asthma symptoms. Different measures of child adjustment yield a complex picture of the behavioral difficulties associated with pediatric Asthma.
Brunner et al (2014) conducted a study on Depression and risk of incident Asthma in adults: The Coronary Artery Risk Development in Young Adults (CARDIA) study. The objective of the study was to examine the association between prevalent elevated depressive symptoms & incident Asthma and between prevalent Asthma and incident elevated depressive symptoms in a cohort of young and middle-aged adults. The method used was a longitudinal association between Asthma and depressive symptoms bi-directionally in the CARDIA cohort. First, 3,614 participants, free of Asthma, were classified by elevated depressive symptoms at the CARDIA Year-5 exam (n = 856 elevated vs. 2,758 not elevated; ages 23–35 yr) and followed for 20 years to incident Asthma. Then, 3,016 participants, free of elevated depressive symptoms, were classified by self-reported current Asthma status (n = 188 prevalent vs. 2,828 not prevalent) at the CARDIA Year-5 exam and followed for 20 years until onset of elevated depressive symptoms. Results show that relative hazard of incident Asthma among those with elevated depressive symptoms was 1.26 (95% confidence interval [CI] = 1.02–1.56) after adjustment for covariates. When depressive status was modeled as the total number of reports of elevated depressive symptoms before the onset of Asthma, the adjusted hazard ratio was 1.15 (95% CI = 1.02–1.29). The hazard of incident elevated depressive symptoms for those with Asthma was no different than the hazard in those without Asthma (adjusted hazard ratio = 0.92; 95% CI = 0.70–1.20). The study concludes that this longitudinal observational study points to Depression as a marker of risk for incident adult-onset Asthma. On the other hand, prevalent Asthma is not associated with incident adult-onset Depression.

Hughes and Dunne (2014) examined living with Asthma; issues affecting the perceived health and Well-Being of Irish adults with Asthma. The aim of this qualitative enquiry, involving participant focus groups, was to investigate the health and Well-Being of
Irish adults who have Asthma, with particular interest in the influences on their health and Well-Being. The study population was recruited from the Asthma Society of Ireland database of members. Data were collected in eight focus group interviews and analysed for themes. Results show that Asthma was found to have a significant impact on the health and Well-Being of participants due to symptom experience, treatments they had to undertake, and the repercussions of uncontrollable events or triggers. It concludes that the unrelenting pressure of managing their Asthma took a toll on many of the participants, who felt their lifestyle had changed dramatically and they had lost some or all of their control over their health and Well-Being.

Trojan et al (2014) conducted a study on Asthma and Depression: The Cooper Center Longitudinal Study. The objective of the study was to examine the association between Asthma and depressive symptoms, controlling for Asthma medications, lung function, and overall health. A cross-sectional study of 12,944 adults was undertaken who completed physician-based preventive health examinations at the Cooper Clinic from 2000 to 2012. Information on medical histories, including Asthma and Depression, and medications were collected. Participants reported overall health status, completed spirometry testing and underwent Depression screening using the 10-item Center for Epidemiologic Studies Depression Scale (CES-D). Dependent variables of current depressive symptoms (CES-D scores ≥10) and lifetime history of Depression were separately modeled using logistic regression with independent variables, including demographics, spirometry, Asthma controller medications, and patient-reported health status. The result shows that the sample was predominantly white and well educated. The prevalence of Asthma was 9.0%. Asthma was associated with an odds ratio (OR) of 1.41 (95% CI, 1.16-1.70; P < .001) of current depressive symptoms based on CES-D score. Asthma was also associated with lifetime
history of Depression (OR, 1.66; 95% CI, 1.40-1.95; P < .001). Neither lung function nor Asthma controller medications were significantly associated with Depression. The study concludes that Asthma was associated with increased prevalence of current depressive symptoms and lifetime Depression in a large sample of relatively healthy adults. These findings suggest that the increased likelihood of Depression among patients with Asthma does not appear to be exclusively related to severe or poorly controlled Asthma. People with Asthma, regardless of severity, may benefit from Depression screening in clinical settings.

Wiltens, Theunissen, Glasser & Zeitz (2012) studied Asthma and Depression: A focus on the patient factors of Asthma knowledge, Asthma severity, and coping. The objective of the study was to examine severity of Asthma, level of knowledge about Asthma and coping strategies as they potentially relate to occurrence of Depression among Asthma patients. A cross-sectional survey was administered to 105 Asthma patients aged 18 to 45 years and presenting for routine care in 1 of 3 participating clinics. The survey assessed knowledge of Asthma, Asthma coping, Depression symptoms, perceived Asthma severity, lifestyle and motivation for change. The research questions were tested using Pearson’s correlation coefficients, independent samples t-tests, odds ratios and multiple regression analysis. The result of the study shows that there is a significant (P<0.01) positive correlation between the Depression scale rating and Asthma severity as well as a significant (P<0.01) negative correlation between Asthma coping and Asthma severity. The mean score of the Durham GRECC was significantly (P<0.01) higher among patients with lower Asthma knowledge. The study concludes that patients with more severe Asthma, lower Asthma knowledge or poorer coping strategies were more likely to be at risk for being depressed.
Lim, Wood, Miller, & Simmens (2011) studied effects of paternal and maternal depressive symptoms on child internalizing symptoms and Asthma disease activity: Mediation by interparental negativity and parenting. This study tested a hypothesized model of the relationships among parental depressive symptoms, family process (interparental negativity and negative parenting behavior), child internalizing symptoms and Asthma disease activity. One hundred and six children with Asthma, aged 7 to 17, participated with their fathers and mothers. Parental depressive symptoms were assessed by self-report. Interparental and parenting behaviors were observed and rated during family discussion tasks. Child internalizing symptoms were assessed by self-report and by clinician interview and rating. Asthma disease activity was assessed according to National Heart Lung and Blood Institute (NHLBI) guidelines. Results of structural equation modeling generally supported interparental negativity & negative parenting behavior as mediators linking parental depressive symptoms and child’s emotional & physical dysfunction. However, it can be concluded that paternal and maternal depressive symptoms play their role through different pathways of negative family process.

Alison and Michael (2010) performed a study on Asthma and cigarette smoking. The purpose of this review paper is to present and evaluate the empirical literature on the association between Asthma and cigarette smoking. The study conducted a literature search utilizing electronic search engines (i.e., PsycINFO and MEDLINE) to examine databases using the following key word algorithms: smoking OR nicotine OR tobacco AND Asthma. Empirical evidence suggests that (1) smoking is more prevalent among individuals with Asthma than those without; (2) smoking is a risk candidate for the development of Asthma; (3) smoking is associated with decreased Asthma control and increased risk of mortality and Asthma attacks and exacerbations; (4) smokers with and without Asthma may have different
risk factors for smoking onset as well as different smoking motives and outcome expectancies; and (5) smoking cessation is associated with improvements in lung functioning and Asthma symptoms. The study concludes that future work in this domain of study will lead to clinically relevant health care advances as well as the development of theoretically driven, methodologically diverse lines of research exploring Asthma-smoking comorbidity issues.

Tsai, Clark, Sullivan, & Camargo (2009) examined development and validation of a risk-Adjustment tool in acute Asthma. The objective of the study was to develop and prospectively validate a risk-adjustment tool in acute Asthma. Data were obtained from two large studies on acute Asthma, the Multicenter Airway Research Collaboration (MARC) and the National Emergency Department Safety Study (NEDSS) cohorts. Both studies involved >60 emergency departments (EDs) and were performed during 1996–2001 and 2003–2006, respectively. Both included patients aged 18–54 years presenting to the ED with acute Asthma. The study design adopted was retrospective cohort studies. The data collection process included clinical information drawn from medical record review. The risk index was derived in the MARC cohort and then was prospectively validated in the NEDSS cohort. The result shows that there were 3,515 patients in the derivation cohort and 3,986 in the validation cohort. The risk index included nine variables (age, sex, current smoker, ever admitted for Asthma, ever incubated for Asthma, duration of symptoms, respiratory rate, peak expiratory flow, and number of beta-agonist treatments) and showed satisfactory discrimination (area under the receiver operating characteristic curve, 0.75) and calibration (p=.30 for Hosmer–Lemeshow test) when applied to the validation cohort. It concludes that a validated novel risk-adjustment tool was developed for acute Asthma. Therefore this tool can be used for health care provider profiling to identify outliers for quality improvement purposes.
Erwin and Gelfand (2008) surveyed the impact of Asthma on the patient, the family and society in relation to Well-Being of the diseased. The objective was mainly to study the impact of Asthma on the patient, the family & society and considers the role of primary care providers and pediatricians in reducing the burden of Asthma. Nearly 8% of the US population suffers from Asthma. The most recent Government data show that Asthma attack prevalence, defined as the proportion of individuals with at least 1 Asthma episode in a 12-month period, was 4.2%. Results show that consistent with its chronicity and its manifestations, including pulmonary function impairment and symptoms of wheezing, cough, dyspnea, and chest tightness, Asthma impairs patients’ Well-Being and can significantly interfere with the ability to undertake normal daily activities. Among those with at least 1 Asthma attack in the previous year in the 2002 National Health Interview Survey (NHIS), Asthma was responsible for 14.7 million missed school days in children 5 to 17 years old and 11.8 million missed workdays in adults 18 years and older. In keeping with the high prevalence and life impact of Asthma, Asthma-associated healthcare resource use is substantial. In 2002, Asthma was responsible for 13.9 million outpatient visits, 1.9 million emergency department visits, and 484 000 hospitalizations in the United States. The annual economic cost of Asthma in the United States is estimated at $14 billion. It concludes that children are disproportionately affected by Asthma and have higher rates of Asthma-associated healthcare use and greater Asthma related activity limitation than adults. These data reflect a growing burden of Asthma in terms of morbidity, quality of life, and healthcare costs and demonstrate that Asthma care is falling short of National Heart, Lung, and Blood Institute (NHLBI) goals. Primary care providers, including pediatricians, play a pivotal role in improving quality of care for Asthma given that most cases of Asthma are diagnosed and managed in the primary care setting.
Fiese et al (2008) surveyed family climate of routine Asthma care: Associating perceived burden and mother-child interaction patterns to child Well-Being. Family Process. This preliminary report links the literatures on family Asthma management practices and on the characteristics of family interaction patterns thought to influence children's adjustment to a chronic physical illness. Specifically, this study of 60 families with a child with Asthma examined the extent to which perceived burden of routine Asthma care affected child mental health via its influence on parent-child interaction patterns. The results are in terms of how overall family climate and regulation of routine affects child Well-Being. Mothers completed a measure of Asthma management routine burden, mother and child were observed in a 15-minute interaction task and children completed measures of child anxiety & Asthma quality of life (QOL). The study concludes that perceived routine burden significantly predicted child anxiety and QOL through its effect on mother-child rejection/criticism. The same pattern did not hold for mother intrusiveness/control.

Thavagnanam et al (2008) conducted a study on meta-analysis of the association between Caesarean section (C-section) and childhood Asthma. The main objective was to review published literature and perform a meta-analysis summarizing the evidence in support of an association between children born by Caesarean section and Asthma. The methods used were MEDLINE, Web Science, Google Scholar and PubMed to identify relevant studies. Odds ratio (OR) and 95% confidence interval (CI) were calculated for each study from the reported prevalence of Asthma in children born by Caesarean section and in control children. Meta-analysis was then used to derive a combined OR and test for heterogeneity in the findings between studies. The results show that twenty-three studies were identified. The overall meta-analysis revealed an increase in the risk of Asthma in children delivered by Caesarean section (OR=1.22, 95% CI 1.14, 1.29). However, in this analysis, there was
evidence of heterogeneity ($I^2=46\%$) that was statistically significant ($P<0.001$). Restricting
the analysis to childhood studies, this heterogeneity was markedly decreased ($I^2=32\%$) and no
longer attained statistical significance ($P=0.08$). In these studies, there was also evidence of
an increase ($P<0.001$) in the risk of Asthma after Caesarean section (OR=1.20, 95% CI 1.14,
12.6). It concludes that in this meta-analysis, it was found a 20% increase in the subsequent
risk of Asthma in children who had been delivered by Caesarean section.

Moorie et al (2006) examined the effect of childhood eczema and Asthma on parental
sleep and Well-Being: A prospective comparative study. The objective of the study was to
compare the impact of caring for a child with atopic eczema vs. Asthma on parents’ sleep and
Well-Being. Ninety-two parents of 55 children who had moderate to severe atopic eczema or
Asthma took part in this prospective, questionnaire-based study. It was conducted at regional
eczema and Asthma outpatient clinics within a U.K. tertiary pediatric hospital. The main
outcome measures were the number and duration of parents’ sleep disturbances, as well as
their anxiety and Depression scores. The result shows that mothers caring for children with
atopic eczema lost a median of 39 min of sleep per night and fathers lost 45 min sleep per
night. This compared with a median of 0 min sleep lost by parents who had children with
Asthma ($P < 0.001$). These differences were independent of the age of the children, and
whether the child came from a single-parent or two-parent family. There was a direct
correlation between the severity of sleep disturbance and the level of maternal anxiety ($\rho =
0.58; P = 0.002$) and Depression ($\rho = 0.73; P < 0.001$), as well as the level of paternal
anxiety ($\rho = 0.59; P = 0.01$). The study concludes that compared with looking after a child
with chronic Asthma, caring for a child with chronic atopic eczema was associated with
greater parental sleep disturbances. Disruption to parental sleep correlated with anxiety levels
and, in the case of mothers, Depression scores.
Eisner et al (2005) studied impact of depressive symptoms on adult Asthma outcomes. The main objective of the study was to elucidate the impact of depressive symptoms on patient-centered outcomes and emergency health care use in adults with Asthma. A prospective cohort study was undertaken of 743 adults with Asthma who were recruited after hospitalization for Asthma. Depressive symptoms were defined as having a score of 16 or more on the Center for Epidemiologic Studies Depression Scale (CESDS). The impact of depressive symptoms on patient-centered outcomes (validated severity-of-Asthma score, Marks Asthma Quality of Life Questionnaire, and 12-Item Short-Form Health Survey physical component summary score) and on future emergency health care use for Asthma ascertained from computerized databases was examined. The results show that the prevalence of depressive symptoms was 18% (95% confidence interval [CI], 15%-21%) among adults with Asthma. Depressive symptoms were associated with greater severity-of-Asthma scores after controlling for age, sex, race/ethnicity, educational attainment, and cigarette smoking (mean score increment, 2.6 points; 95% CI, 1.8-3.4 points). Furthermore, depressive symptoms were associated with poorer Asthma-specific quality of life (mean score increment, 19.9 points; 95% CI, 17.7-22.1 points) and poorer physical health status (mean score decrement, 3.7 points; 95% CI, 1.5-5.8 points). Depressive symptoms were associated with a greater longitudinal risk of hospitalization for Asthma (hazard ratio, 1.34; 95% CI, 0.98-1.84). After controlling for differences in preventive care for Asthma, the relationship was stronger (hazard ratio, 1.45; 95% CI, 1.05-2.0). The study concluded that depressive symptoms are common in adults with Asthma and are associated with poorer health outcomes, including greater Asthma severity and risk of hospitalization for Asthma.

Opolski and Wilson (2005) conducted a study on Asthma and Depression: A pragmatic review of literature. The method used for the study was PubMed and PsycINFO,
databases were used to search for English-language articles relating to Asthma and Depression research. The resulting articles were then reviewed and summarized, creating a report that was used to develop research recommendations. The result shows that (a) results are mixed as to whether persons with Asthma are more likely to be depressed than those without Asthma; (b) Asthma and Depression may have an ‘additive’ adverse effect on the normal Asthma-related quality of life reductions; (c) subjective measures of Asthma severity may be more strongly related to Depression than objective measures; (d) specific Asthma symptoms appear to be linked to Depression; (e) sadness and Depression can produce respiratory effects consistent with Asthma exacerbations; (f) Depression appears to be negatively related to Asthma treatment compliance; (g) corticosteroid use in Asthma treatment has been associated with Depression, though it is unclear how common this problem is in real life; (h) interventions that address the physical, psychological, and social consequences of Asthma are likely to lead to the most successful treatment outcomes; (i) treating the Depression of individuals with Asthma is likely to minimize the negative effects of the coexistence; and (j) a number of common methodological problems were observed in the literature. The study concludes that although they are most likely to be targeted toward patients already suffering from both Asthma and Depression, integrated treatment programs may also be valuable from a prevention focus, working to inhibit the development of Depression and the negative psychological and physical health effects that may follow.

Krommydas et al (2004) surveyed Depression and pulmonary function in outpatients with Asthma. The purpose of this study was to examine the relation between Depression, anxiety and pulmonary function in Asthmatics. Thirty-eight adult asthmatic patients underwent psychometric evaluation with the DSSI/sAD questionnaire, filled in an Asthma questionnaire and underwent spirometry. Results reveal that majority of patients suffered
from mild-persistent Asthma. Twenty-six patients reported symptoms of anxiety and 25 patients reported symptoms of Depression. A statistically significant reduction in FEV$_1$ and FEV$_1$/FVC values was observed in asthmatic patients with symptoms of Depression. The mean value of FEV$_1$ was 81.84(±20.83) in patients without symptoms and 63.73(±17.99) in patients with symptoms of Depression. The mean values of FEV$_1$/FVC were 0.85(±0.11) and 0.75(±0.10), respectively. These findings conclude a high frequency of Depression and anxiety in adult Asthmatic patients. A biological linkage between Depression and impaired pulmonary function is also indicated.

Brown S. E. (2003) carried a study on Depression in patients with Asthma. Twenty-six outpatients were given the Inventory of Symptomatology Self-Report (IDS-SR$_{30}$), a patient rated assessment tool for depressive symptom severity, and the short form 12-item (SF-12), a patient-rated health survey assessing physical and mental health functioning. Scores on the IDS-SR$_{30}$ were significantly and negatively associated with scores on the SF-12 physical ($R^2$ = 0.21, $p = 0.018$) and mental ($R^2$ = 0.50, $p < 0.0001$) scales. Another potential is dysregulation of the neuroendocrine system which is a subset of Asthma patients and of persons with Depression exhibit evidence of glucocorticoids resistance. As main outcome measures, depressive symptoms are more common in Asthma patients than in general population. It concludes that the age of onset of Depression in Asthma patients as well as genetic studies are needed to try to determine the cause and effect relationship between these two common conditions.

Goldney et al (2003) surveyed Asthma symptoms associated with Depression and lower quality of life. The objective of the study was to identify any association between Asthma & Depression and quality of life. A face-to-face Health Omnibus Survey (HOS) of a
random and representative sample of the South Australian population in August 1998 was collected. 3010 randomly selected participants aged 15 years and above were selected. Main outcome measures reveal prevalence of doctor-diagnosed Asthma, scores for Depression (measured by PRIME-MD instrument) and quality of life (measured by SF-36) in affected participants. The results show that the prevalence of Asthma was 9.9%. The prevalence of major Depression was significantly higher for those who experienced dyspnoea, wakening at night with Asthma, and morning symptoms of Asthma. Quality-of-life scores were also lower for the same groups. The study concludes that Depression is a serious but potentially remediable comorbidity with Asthma that may affect appropriate diagnosis and outcome.

Weisgerber (2003) carried out a study on benefits of swimming in Asthma: Effect of a session of swimming lessons on symptoms and Pulmonary Function Tests (PFTs). The study involving eight children with moderate persistent Asthma were undertaken to determine whether standard swimming lessons improved symptoms and PFTs in asthmatic children. Five children ages 7–12 years old with moderate persistent Asthma were randomized to a swimming lesson group (5- to 6-week session) and three to a control group. Both groups completed pre and post study period PFTs and symptom questionnaires. Findings show that swimming lessons did not produce a significant change in Asthma symptoms or PFTs. The study concludes that swimming has been shown to have definite benefits in improving cardio respiratory fitness in asthmatic children. It has been shown to be less asthmogenic than other forms of exercise. Improvement in Asthma symptoms is also seen in children participating in exercise programs.

Wendy and Jennifer (2003) conducted a study on breastfeeding, Asthma, and atopic disease. Two main types of observational epidemiological studies have been used to question
whether breastfeeding protects children from developing atopic disease and Asthma. These are cohort studies of random samples of children and cohort studies of children with a family history of Asthma or atopy. In each study type, exposure and outcome data are collected either prospectively or retrospectively. In this review, the primary objective was to assess the evidence of whether breastfeeding protects against Asthma and atopic disease. The results show that there is evidence that mothers recall the duration of breastfeeding with accuracy within one month but only over a relatively short period of 1 to 3 years when compared with breastfeeding duration measured prospectively at regular intervals. Further error occurs in retrospective reports because mothers tend to round their estimates to intervals such as 1, 3, or 6 months. Errors in reporting breastfeeding are unlikely to be random given that most mothers are aware that a longer duration of breastfeeding is desirable. As an outcome of this review, an analytical perspective with clinical implications is given. Confounding factors are of major concern in observational studies. Education, smoking status, mother’s diet, socioeconomic status, housing type and thus allergen exposure, home hygiene practices, birth complications, and many other factors differ between mothers who do and do not breastfeed.

Karmaus and Botezan (2002) examined that; ‘Does a higher number of siblings protect against the development of allergy and Asthma?’ The objective of the study was to review the “protective” effects of having a higher number of siblings for the risk of atopic eczema, Asthma wheezing, hay fever, and allergic sensitization. Method used to collect data was mainly review of the literature (Medline since 1965 and references). Main results were that, 53 different studies were identified. For eczema, 9 of 11 studies reported an inverse relation with number of siblings; for Asthma and wheezing, 21 of 31 reported the inverse association; for hay fever, all 17 studies showed the effect; for allergic sensitization or
immunoglobulin E reactivity 14 of 16 studies supported the ‘protective’ effect of a higher number of siblings. The studies emphasize a ‘theory’ that is based exclusively on epidemiological associations. The study concludes that causal factors must meet two criteria; they must vary with sib ship size and they must protect against atopic manifestations. The prevailing ‘hygiene hypothesis’ failed to explain the findings adequately. Alternative explanations include in utero programming or endocrine explanatory models. The epidemiology research into siblings and atopic disorders has entered an intellectually challenging phase. Possessing sufficient knowledge about the causal factors might prevent at least 30% of all cases of Asthma, eczema, and hay fever.

McQuaid et al (2001) conducted a study on behavioral adjustment in children with Asthma: A meta-analysis. This study is a meta-analytic review of the behavioral adjustment of children and adolescents with Asthma. Of 78 studies initially reviewed, 26 studies (encompassing 28 data sets), reflecting data on nearly 5000 children with Asthma (mean age = 8.4 years; 40% female), met criteria for inclusion. Effect size estimates were calculated across studies using standard methods. Separate effect sizes were calculated for internalizing and externalizing behavioral problems, degrees of Asthma severity, and differences in control group used (i.e., sample controls or normative data). Results indicate that children with Asthma have more behavioral difficulties than do healthy children, with the effect for internalizing behaviors being greater than that for externalizing behaviors ($d_{int} = .73$ vs $.40$). Increased Asthma severity was associated with greater behavioral difficulties. Results did not differ by comparison group (healthy controls vs normative data). The study concludes that patients with Asthma, particularly children with severe Asthma, should be considered at higher risk for behavioral difficulties that may necessitate psychosocial intervention.
Mancuso, Peterson, & Charlson (2000) examined the effects of depressive symptoms on health-related quality of life in Asthma patients. Objective of the study was to assess the effects of depressive symptoms on Asthma patients’ reports of functional status and health-related quality of life. A cross-sectional study was conducted with a setting of primary care internal medicine practice at a tertiary care center in New York City. 230 outpatients between the ages of 18 and 62 years with moderate Asthma were studied. The result shows that patients were interviewed in person in English or Spanish with two health-related quality-of-life measures, the disease-specific Asthma Quality of Life Questionnaire (AQLQ) (possible score range, 1 to 7; higher scores reflect better function) and the generic Medical Outcomes Study SF-36 (general population mean is 50 for both the Physical Component Summary [PCS] score and Mental Component Summary [MCS] score). Patients also completed a screen for depressive symptoms, the Geriatric Depression Scale (GDS), and a global question regarding current disease activity. Stepwise multivariate analyses were conducted with the AQLQ and SF-36 scores as the dependent variables and depressive symptoms, comorbidity, Asthma, and demographic characteristics as independent variables. The mean age of patients was 41 ± SD 11 years and 83% were women. The findings show that, mean GDS score was 11 ± SD 8 (possible range, 0 to 30; higher scores reflect more depressive symptoms) and a large percentage of patients i.e. 45% scored above the threshold considered positive for Depression screening. Compared with patients with a negative screen for depressive symptoms, patients with a positive screen had worse composite AQLQ scores (3.9 ± SD 1.3 vs 2.8 ± SD 0.8, P < .0001) and worse PCS scores (40 ± SD 11 vs 34 ± SD 8, P < .0001) and worse MCS scores (48 ± SD 11 vs 32 ± SD 10, P < .0001) scores. In stepwise analyses, current Asthma activity and GDS scores had the greatest effects on patient-reported health-related quality of life, accounting for 36% and 11% of the variance, respectively, for the composite AQLQ, and 11% and 38% of the variance, respectively, for the MCS in
multivariate analyses. The study concludes that nearly half of Asthma patients in this study had a positive screen for depressive symptoms. Asthma patients with more depressive symptoms reported worse health-related quality of life than Asthma patients with similar disease activity but fewer depressive symptoms.

Zielinski et al (2000) conducted a study on Depression in Asthma: Prevalence and clinical implications. The objective of the study was to find out the prevalence of Asthma and Asthma-related morbidity and mortality. The data sources were the MEDLINE (1966–1999) & PSYCHINFO (1967–1999) and databases were also used to find English-language articles on Asthma and Depression. Data synthesis suggest that depressive symptoms are more common in Asthma patients than in the general population and perhaps even more common than in some other general medical conditions. Depression may be associated with Asthma morbidity and mortality. Limited data suggest the older tricyclic antidepressants may improve both Depression and Asthma symptoms. It concludes that depressive symptoms are common in Asthma patients.

Joshua et al (1999) studied the effect of tape-recorded relaxation training on Well-Being, symptoms and Peak Expiratory Flow Rate (PEFR) in adult asthmatics: A pilot study. This study explored the effect of a tape-recorded relaxation intervention on Well-Being (mood and stressor), Asthma symptoms and a measure of pulmonary function. Twenty adult asthmatics were studied for 21 days in their natural environment using a multiple baseline design. Results indicate that self-administered relaxation training (including both breathing exercises and muscle relaxation) led to decreased negative mood and stressor report. Reporting of Asthma symptoms decreased over time, and PEFR was increased by relaxation
training. Asthma medication use was unchanged. It concludes that tape-recorded relaxation training positively impacts Well-Being, Asthma symptoms and PEFR in a naturalistic setting.

Larry C. (1999) investigated fetal oxygenation, assessment of fetal Well-Being, and obstetric management of the pregnant patient with Asthma. Asthma is the most common chronic respiratory disease affecting pregnant women. To provide the best obstetric care, it is necessary to understand fetal oxygenation and how it can be affected by maternal Asthma. During pregnancy, fetal Well-Being should be closely monitored, and Asthma care should be carefully integrated with obstetric care. Optimal fetal assessment includes establishing gestational age, assessment of fetal growth and monitoring fetal activity. Evaluation for high-risk patients may include the non-stress test, contraction stress test, or biophysical profile.

Field, Stephen, & Lloyd (1998) experimented on the topic, ‘Does medical anti-reflux therapy improve Asthma in asthmatics with Gastro Esophageal Reflux (GER)?’: A critical review of the literature. The objective of the study was to identify and critically review the peer-reviewed, English-language studies of the effects of medical anti-reflux therapy in asthmatics with GER. Using the 1966 to 1996 MEDLINE database, Asthma was combined with GER to identify all studies of the effects of medical anti-reflux therapy on Asthma control. The articles and bibliographies were also reviewed. Studies were graded according to Sackett's criteria and grouped by levels of evidence. Results show that a total of 242 citations were found; 171 were published in English. Twelve studies of the effects of medical anti-reflux therapy on Asthma control, with a total of 326 treated patients, were identified. Eight studies were placebo-controlled, three were open studies, and one used an untreated control. Eight studies treated 20 or fewer patients. Reflux symptoms either did not improve or the effects of anti-reflux therapy on them were not reported in four studies. The combined data
from the controlled medical anti-reflux studies showed that: (1) Asthma symptoms improved in 69% of the subjects; (2) Asthma medication use was reduced in 62% of the subjects; (3) Evening peak expiratory flow (PEF), but not PEF at other times, improved in 26% of the subjects; and (4) Spirometry did not improve in any of the placebo-controlled anti-reflux studies. To conclude analysis of the combined data suggests that medical anti-reflux therapy improves Asthma symptoms, may reduce Asthma medication use, but has minimal or no effect on lung function.

Padur et al (1995) conducted a study on psychosocial adjustment and the role of functional status for children with Asthma. This study examined the psychosocial adjustment of children with Asthma compared to children with Diabetes, with cancer, and healthy children and the role of functional status in psychosocial adjustment. The total sample included 100 children, aged 8-16 years, (mean = 11.5 years), consisting of 48 boys and 52 girls. Results show that children with Asthma scored significantly higher on measures of affective adjustment (Depression and internalizing behavior), significantly lower on self-esteem, and evidenced significantly greater functional impairment. Children with cancer missed significantly more school days. After controlling for functional status, no significant differences remained in affective adjustment but absences remained significantly higher for the children with cancer.

One hundred and six patients having Bronchial Asthma in Zaria were studied in the Nigerian savanna region by Warrell (1975). This group resembled hospital attainders in general in containing a disproportionately large number of immigrants from southern Nigeria and students undergoing higher education, wherein childhood Asthma was rare. Asthma started after the age of 19 years in 69 per cent of patients. Results indicate twenty-seven per
cent gave a history of rhinitis but none had eczema. Twenty-two per cent gave a family history of Asthma. Coetaneous hypersensitivity to house dust supported by a history of attacks being precipitated by dust was found in 41 per cent of patients. Asthma was worst in the rainy season in 45 per cent of patients. Mites were found in mattress dust samples; the mean count was 243 mites per g dust; Dermatophagoides farinae formed 86.6 per cent of the total mite population. The variability of airways obstruction averaged 50 per cent of maximum values for forced expiratory volume in the first second (FEV1) and peak expiratory flow (PEF). The median severity of airways obstruction measured as FEV1/VC per cent was four standard deviations below predicted normal. Eighty-seven per cent of patients were positive to prick skin tests with one or more allergens. The commonest reactions were to house dust (58 per cent), house dust mite (45 per cent) and Dermatophagoides farinae (44 per cent). Fifty-one per cent of a group of controls were also positive on skin testing but the pattern of responses was different from the asthmatic patients. This high proportion of reactors is explained by high allergen load. Serum IgE levels were lower in the Asthmatics than in a group of healthy controls who showed the very high levels characteristic of some African populations. It concludes that the controls were protected from atopic disease by developing high blocking levels of non-specific IgE, perhaps in response to gut helminths.

Dubo et al (1961) examined a study of relationships between family situation, Bronchial Asthma, and personal adjustment in children. The first phase of this research project on childhood Asthma carried was out jointly by allergists at the University of Michigan Medical Center and child psychiatrists at Hawthorn Center. The focus of the present investigation is the relationship between family psychological situation and the child’s Asthma situation. Seventy-one children with chronic bronchial Asthma and their
families were studied. The patients were drawn from the regular office and clinic patients of practicing allergists. The Asthma situation was studied with emphasis on severity, course, and response to medical management over a period of at least 2 years. Psychiatric study involved individual interviews with each parent and with each patient and systematized recording of findings. Seventy-one variables relating to family situation, the child’s adjustment and Asthma situation were recorded for statistical analysis. Three statistical assessments of the data were made from which the outcomes are: (a) Exploration of relationships between variables: No significant relationships between variables of the family situation and those of the child’s Asthma are found. (b) Comparison of two sub-groups representing extremes of family adjustment, including relationships, stability and child care: The 20 families showing best adjustment and the 20 families showing poorest adjustment are compared on 23 variables including those dealing with severity of Asthma and response to treatment. The independent grouping of subjects is confirmed by consistently significant contingencies for all variables concerned with family adjustment. (c) Three groups differentiated on the basis of good, moderate and poor family situation are compared on the changes shown in severity and response to treatment from initial to follow-up status: None of the 3 groups shows significant differences from each other in pattern of changes. All these statistical explorations lead to the conclusion that, in the areas of severity of Asthma and response to treatment, no relationships with family situation are demonstrable. On the other hand, close relationships between family situation and child’s adjustment are consistently demonstrated by these findings.
What can be concluded from the review of studies presented in this chapter, is that there is a shortfall of systematic studies into the various aspects of the complex problem of Asthma and its relation to the various factors like Adjustment, Depression and feeling of Well-Beingness of the human beings. As a result, the researcher has made an attempt to identify a niche area where Asthma can be studied from the psychological angle. Thus, the present research findings would do the enhancement in the current envelope of knowledge and principally contribute to the value addition of the psycho-social factors of Asthma.

The details regarding the research methodology have been covered in the following Chapter – 3.