Adolescence has traditionally been viewed as a time of prime health. Compared to those in other age groups, adolescents appear fairly healthy. The only age group to experience lower mortality rates compared to adolescents are younger children. It is believed that adolescents are infrequently hospitalized and have relatively low rates of disability and chronic disease. Yet, despite this ostensibly optimistic picture, concern about the health status of youth has increased in recent years, and views of adolescence as a healthy decade are being challenged (Millstein et al., 1989).

According to McPherson et al. (1998), children with special health care needs (CSHCN) are defined as “those who have chronic physical, developmental, behavioral, or emotional problems and who require health and related services beyond that required by children generally”. About 18% of children in America have such chronic health conditions, and nearly 7% have associated functional limitations, such as decreased ability to participate in school or play (Newacheck et al., 1998; Newacheck and Taylor, 1992).

According to Newacheck (1990), children with complex and disabling chronic conditions often require a continuum of health care that includes interdisciplinary pediatric rehabilitation services, along with other preventive, primary, specialty, emergent, and acute care services. Because of their high rate of service utilization, approximately 10% of all children account for nearly 70% of children’s health care expenditure.

Chronic illness remains a significant health problem world over, with an estimated 31% of children under the age of 18 having at least one chronic health condition in the US alone (National Center for Health Statistics, 1990; Newacheck et al., 1992). These illnesses dramatically affect the psychosocial functioning and development of children and their families (Cadman et al., 1987). To complicate matters further, stressful psychosocial factors have negative consequences for health by directly influencing the disease process and by interfering with disease management (Children’s Defence Fund (CDF), 1991; Weiner, 1992)
Children with chronic illness may be at increased risk for developing adjustment difficulties. Although many children are well adjusted psychosocially, others may become depressed or anxious or develop problems in peer relationships (Noll et al., 1991). Children with chronic illnesses often miss school due to illness-related complications, medication side effects, and hospitalizations (Gil et al., 2000). They also may not be afforded the same opportunities as healthy peers to participate in age-appropriate social activities because of illness-related restrictions (Wallander and Varni, 1998).

What is Chronic Illness

Perrin (1985) defined chronic illness as "one that lasts for a substantial period of time or that has a sequel that are debilitating for a long period of time".

According to Feldman (1996), chronic disease refers to conditions that require at least 6 months of continuous medical care and behavioral adaptation with permanent alterations in lifestyle. While disease or disorder refers to the presence of a pathologic process and an illness describes being in an unhealthy state, with the improvements in early detection, diagnosis, and management, many of these young people will survive for many years, with illnesses previously considered fatal.

According to Neinstein (2001), chronic illness is a health condition that results in limitation of daily activities or disability and is characterized by either a permanent disability, residual disability or a nonreversible pathological alteration requiring a long period of supervision, observation, and care.

Mohan (2002) reported that chronic illness refers to those diseases that persist for a long period usually throughout the life. They usually don't have a permanent cure and can be only be cured by medicines and life style adjustment.

Chronic illness can be classified in terms of life threatening disorders like cancer, aids, renal failure and Non-life threatening disorders; which are serious disorders like hypertension, asthma, diabetes, coronary disorders and arthritis. The former category shows little response to treatment and the
survival chances in these cases are also very minimal. On the other hand the severity in the latter category can be controlled by means of adequate medication, controlled diet and exercise. However, patients suffering with such life-long diseases need to make many adjustments in their family and outside. The patient as well as the family must be psychologically prepared to accept the disease as a part of their life and learn to adjust and live with it without really breaking down.

PREVALENCE

According Cadman et al. (1986) as many as 10-20% of teenagers have chronic conditions according to the studies conducted in America and Canada. Adequate data in India and Southeast Asia on prevalence figures of chronic conditions are difficult to obtain. Overall, boys have a higher incidence of chronic illness, as do offspring of families living below the poverty line (Cadman et al., 1986).

Valia et al. (1991) examined 12481 children. They reported more than half (54%) had one or more skin diseases. The commonest ones were pediculosis capitis (35%), pityriasis alba (12%) acne vulgaris (8%), miliaria (4%) and pyodermas (3%).

According to Feldman (1996) having a chronic illness as a child or adolescent has become increasingly common, with estimates that 10-20% of children are affected. According to Lieder (1997), it is estimated that up to 20% of the school-age population has a chronic medical illness or disabling condition. Serious chronic diseases that characterize adolescence include asthma, Type II diabetes, cystic fibrosis, rheumatoid arthritis, and sickle cell disease as well as disabilities such as spina bifida and cerebral palsy. In addition, the incidence of HIV/AIDS has increased in adolescence.

According to Newachek et al. (1998) and Stein et al. (1999), between 10 and 13 million children in the United States have a chronic health condition.

According to Neinstein, (2001) prevalence of chronic illness in Adolescents is 6-10% between the ages of 10 and 18.
Asthma is not just a public health problem for developed countries. In developing countries, however, the incidence of the disease varies greatly. India has an estimated 15-20 million asthmatics. Rough estimates indicate a prevalence of between 10% and 15% in 5-11 year old children (WHO, 2001).

According to Paramesh (2002) allergic respiratory disorders, in particular asthma are increasing in prevalence, in a hospital based study on 20,000 children under the age of 18 years from 1979, 1984, 1989, 1994 and 1999 in the city of Bangalore, there was a prevalence of 9%, 10.5%, 18.5%, 24.5% and 29.5% respectively for asthma.

According to Dogra and Kumar (2003) little information is available about the prevalence of skin conditions among children in the general population of northern India. Low socioeconomic status, malnutrition, overcrowding, and poor standards of hygiene are important factors accounting for the distribution of skin diseases in developing countries such as India. In order to estimate the burden and relative frequency of dermatological diseases among children in the community, they measured the point prevalence of skin conditions in 12,586 Indian school children ages 6–14 years. The overall point prevalence of one or more identifiable/apparent skin conditions was 38.8%. Of those studied, 3786 children (30%) had only one skin disease, 765 (6%) had two, and 336 (2.7%) had three skin pathologies. The most common skin conditions and their respective point prevalences were skin infections (11.4%), pityriasis alba (8.4%) dermatitis/nonspecific eczemas (5.2%), infestations (5.0%), disorders of pigmentation (2.6%), keratinization disorders (mostly keratosis pilaris) (1.3%), and nevi/hamartomas (1.1%). This study shows that skin conditions are common in children and about one-third of them are affected at any given time.

Awasthi et al. (2004) reported prevalence of Asthma in Northern India to be 2.3% in 6-7 years of children and 3.3% in the age group of 13-14 years.

According to Jindal and Gupta (2004), bronchial asthma is a common disorder which affects about 4 per cent of adult males and about 1.3 per cent of adult female population in north India. Prevalence of asthma in adults is
reported to be generally similar from Mumbai i.e., 3 per cent physician-diagnosed asthma (Chowgule et al., 1998). In children, however, the prevalence figures are markedly variable from about 1.8 to 12.4 per cent in different reports (Chabra et al., 1998; Gupta et al., 2001).

On the basis of 18 prevalence studies of the general population, WHO (2005) reported that in developing countries (10 in sub-Saharan Africa) 13 provided data specific to children, 17 to rural areas, and 4 to urban areas. All reported high prevalence figures for skin diseases (21-87%), the following disorders being the commonest in children: pyoderma (prevalence range 0.2-35%, 6.9-35% in sub-Saharan Africa), tinea capitis (1-19.7%), scabies (0.2-24%, 1.3-17% in sub-Saharan Africa), viral skin disorders (0.4-9%, mainly molluscum contagiosum), pediculosis capitis (0-57%), dermatitis (0-5%), and reactions due to insect bites (0-7.2%).

A survey by Canadian Pediatric Society (2006) revealed following incidence of chronic conditions in adolescence: asthma-58.1; orthopedic disability-54.2; asthma (moderate and severe)-10.0; congenital heart disease-7.0; diabetes mellitus-1.8; cleft lip plate-1.5; spinal bifida-.4; sickle cell anemia-.28; cystic fibrosis-.2; hemophilia-.15; acute lymphocytic leukemia-.11; Chronic renal failure -.08; muscular dystrophy-.06.

CHRONIC ILLNESS , PSYCHOPATHOLOGY AND ADOLESCENCE

Psychological Sequel of Chronic Illness

Social forces may present both additional risks for psychopathology and/or provide a buffer and support for children with disabilities and their families. The act of labeling a disability is itself fraught with problems since accurate diagnosis and identification of risks and problems are necessary for intervention, but the labels may become part of a self-fulfilling prophecy (Pless and Nolan, 1991). People with chronic diseases or disabilities may be perceived as "damaged goods" (Phillips, 1990) or categorized as devalued people (Wolfensberger and Tullman, 1991). Regrettably, professionals may unwittingly reinforce or act upon limited or stereotyped expectations and
facilitate the process of stigmatization (Rubenfeld, 1988; Sigelman, 1991). Parents are sometimes characterized as overprotective, shopping for treatments, depressed, hostile, overcompensating, and poorly adjusted to their child's disability (MacKinnon and Marlett, 1984). Both parents and their children with disabilities are vulnerable to prejudice secondary to these stereotypical beliefs. These social pressures are likely to create parental stress and diminish parental resources necessary for nurturance and adjustment to the chronic illness of their children (Westman, 1991).

The diagnosis of a chronic disease not only produces the need for behavior change, it also evokes many emotional changes that may require attention. The impact of chronic illness on the individual can be pervasive affecting physical and emotional well-being, work, sex, and family life (Burish and Bradley, 1983). Chronic disease can produce a variety of adverse outcomes, including pain and discomfort, fear and uncertainty about the future, and a variety of adverse emotional effects (Burish et al., 1987), such as anxiety and depression. When left untreated, the emotional distress associated with chronic illness represents a substantial reduction in patients' quality of life and may further interfere with physical rehabilitation and return to work, leisure, and social activities. Researchers are documenting the high prevalence of emotional distress in chronically ill patients and are designing interventions to prevent or reduce this distress.

According to Kazdin (1988; 1993), historically, the study of childhood psychological dysfunction has been complicated by inadequate diagnostic criteria for children and an insufficient understanding of psychological development between infancy and adulthood. Determining the relationship between chronic physical disorders in children and the subsequent risk for psychopathology is additionally hampered by multiple methodological problems in defining and measuring these two constructs (Pless and Nolan, 1991). Pless and Nolan (1991) summarized the literature in this area and concluded that nearly 10% of children have some form of chronic physical illness with twice the risk of psychopathology. An overall elevation in emotional
or behavioral difficulties is typically described in studies on children with chronic disease and disabilities, without delineation or specific diagnostic criteria (Breslau, 1985). In one attempt to delineate emotional disorders, Cadman and his colleagues (1987) randomly sampled 1,869 families, including the children and their teachers, and found an overall increase in neurotic disorders, attentional disorders, conduct disorders, social maladjustment, and multiple psychiatric disorders among children with chronic diseases or disabilities. However, there was no preponderance of any specific emotional disorder.

Youths diagnosed with chronic physical disorders are at increased risk for psychological disorders (Holden et al., 1996). Overall, adjustment to chronic illness appears to be less influenced by the severity of the condition than by psychological and environmental factors (Chaney et al., 1997).

A child’s serious illness or disability can place psychological and social burdens on both child and family (Hagerty, 1981; Steinhauser, 1974). Epidemiologic data show that children with chronic health conditions have higher rates of mental health problems than children without such conditions (Cadman et al., 1987; Wallander et al., 1988).

Pless and Wadsworth (1988) have documented that higher rates of psychological morbidity persist into adulthood. Although children themselves bear the major psychosocial burden of their chronic health condition, studies have documented increased psychological risk among their parents. The number of children and families who are vulnerable to psychological problems secondary to child chronic illness is large.

Chronic illness poses considerable stress for adolescents. Epidemiological surveys have shown that adolescents with a chronic disease are at a significantly greater risk than their healthy peers of developing behavioral and emotional problems (Pless and Nolan, 1991).
ADOLESCENCE, CHRONIC ILLNESS AND DEVELOPMENTAL HURDLES

Adolescence is a time of evolution from concrete, present-oriented thinking, towards abstract reasoning. The specific stage of development of the adolescent during which the chronic illness appears may have a significant impact on the patient. Cognitive development may limit or enhance the resources an adolescent has to cope with during a chronic illness. Regression to an earlier stage of cognition may take place at the time of diagnosis as well as at the terminal phase of an illness. Identifying characteristics of each developmental stage may assist the practitioner in assessing and managing the adolescent with chronic illness more effectively. The following stages of development need to be considered (Abraham et al., 1999).

Preadolescence (before 10 years) – Adolescents with illnesses that have occurred early in childhood may have limited understanding or insight into their condition. Chronic illness or disability that has begun at birth or in early childhood may lead to rejection or overprotection by parents. Parental and self expectations of the developing adolescent may be lowered. Such changes may have major implications for the setting and achievement of future goals by the adolescent.

Early adolescence (10-13 years) – This stage is characterized by the evolution from concrete to more abstract thinking. This period is also marked by the onset of puberty and rapid physical changes. Chronic illness during this period may lead the adolescents to become preoccupied with their prepubertal physical appearance and to develop a negative body image.

Middle adolescence (14-17 years) – Occurrence of chronic illness at this age may be most devastating. During this phase, the normal adolescent is more involved with experimentation, separation from parents and identification with a peer group (Cadaman et al., 1986). A chronic illness may affect an adolescent’s progress in these areas. Non adherence with treatment recommendation is a frequent problem during this period.

Late adolescence (17-20 years) – Chronic illness starting at this period usually causes less upheaval. At this stage, the teenager will already have
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Gained self-confidence and identity. Concerns are realistically focused on how the disease may disrupt vocational and educational plans as well as marriage and prospects for leading a normal family/community life (Neinstein et al, 1996).

The Theory of Developmental Tasks Designed by Havighurst (1953):

According to Havighurst (1953), a developmental task is a task which arises at or about a certain period in the life of the individual, successful achievement of which leads to happiness and to success with later tasks, while failure leads to unhappiness in the individual, disapproval by the society and difficulty with later tasks.

Havighurst described eight age-specific developmental tasks for the adolescent period: adolescents must learn to accept their own body, adopt a masculine or feminine social role, develop close relationships with friends, prepare for an occupation and romantic relationships, achieve emotional independence from parents, establish values and an ethical system to live by, and strive for social responsibility. Havighurst's concept of developmental tasks is unique in that it integrates challenges from three different domains: (a) physical development and body concept, (b) adolescent personality and identity, and (c) societal expectations. In addition, emphasis is placed on the individual's activity in integrating these demands and linking the developmental tasks of different life phases (Seiffege Krenke, 1998).

Adolescents are on the bridge between childhood and adulthood, sometimes seeming quite baby like and at other times seeming quite mature and self-possessed. The developmental tasks of the teen years are centered on making the transition to independent adulthood (Goodheart and Lansing, 1997):

1. Adolescents must come to grips with adult sexuality- from the appearance of secondary sex characteristics at the beginning of adolescence to handling sexual impulses in themselves (and others who show sexual interest or rejection), to trial romantic relationships as they progress through adolescence.
2. They must loosen the dependent ties to parents—a process that has been called a second individuation by Blos (1967). Meeks (1986) believed it is more than a recapitulation of earlier development, because adolescents relate to others (parents and peers) primarily in a narcissistic mode, in response to the unpredictability of body changes, the upsurge of sexual and aggressive impulses, and the need to devalue parents.

3. They must develop autonomy and a coherent sense of identity—paradoxically sought throughout adolescence in the focus on their peers for support and mirroring of their efforts to both belong and break away simultaneously. The search for individuation and autonomy includes forays into the world of work, as young adult contributors to society.

Biopsychosocial Model of Adolescent Development

Adolescence is a transitional developmental period between childhood and adulthood that is characterized by more biological, psychological, and social role changes than any other stage of life except infancy (Lerner et al., 1999). Moreover, there are two transition points during this single developmental period—the transition to early adolescence from childhood and the transition to adulthood from late adolescence (Steinberg, 1996). Given the magnitude of such changes, it is not surprising that there are also significant changes in the types and frequency of health problems and psychological disorders during this developmental period, as compared with childhood (Rutter, 1980).

An organizing developmental framework for understanding adolescent adaptation and adjustment is shown in Figure 1. This framework summarizes the major constructs that have been studied by researchers in this field and is based on earlier models presented by Hill (1980); Holmbeck (1994, 1996); Holmbeck et al., (2000); Holmbeck and Kendall, (1991); Holmbeck and Updegrove, (1995); Steinberg (1996); Steinberg and Morris, (2000) and Grotevant (1998). The model presented is biopsychosocial in nature, in so far as it emphasizes the biological, psychological, and social changes of the adolescent developmental period.
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Interpersonal contexts of adolescents development
- Family
- Peer
- School
- Work

Demographic and Interpersonal moderating Variables
- Ethnicity
- Family structure
- Gender
- Individual response to development changes
- Neighborhoods/Community factors
- Socio-economic status

Primary Developmental changes in Adolescence
- Biological/Puberty
- Psychological/Cognitive
- Social redefinition

Developmental outcomes of Adolescence
- Achievement
- Autonomy
- Identity
- Intimacy
- Psycho sexual development
- Sexuality

Fig1: Biopsychosocial framework for understanding adolescent adjustment (Holmbeck and Shapera, 1999)
Children's concepts of health and illness vary with their developmental stage. They appear to follow a progression, which is consistent with typical cognitive development. Working effectively with a child requires an understanding of development in general, as well as knowing what level a particular child is at and how previous experiences have enhanced or impeded understanding of the disease and its treatment. Generally, children's concepts are more concrete, egocentric, and personal than adults. Children who are chronically ill appear to develop a better understanding of their disorders based on their experiences with being ill than would be expected developmentally (Dingle and Sexson, 2004).

Preschoolers may view their illness or treatment as a punishment or consequence for misbehavior. Magical thinking and the idea of immanent justice allow children to believe they have some control rather than that the illness is due to chance. There is evidence that children acquire a more accurate comprehension of illness and personal control with personal experience as well as age. Older children tend to explain disease using theories of contagion, first including all illness and then developing an understanding of the difference between contagious and non-contagious illness. Research shows that even preschoolers can comprehend the causes of illness if explained appropriately (Dingle and Sexson, 2004).

By early adolescence, many children can comprehend physiological explanations of illness and treatment. The process for understanding the intent of medical procedures and treatment is similar and parallel. Accurate perceptions depend on the child's cognitive abilities and current emotional factors (Dingle and Sexson, 2004). It was found that school-aged children assessed health based on dimensions of functionality, mental health, and adherence to a healthy lifestyle. Being ill can affect the school-age developmental tasks of mastery and becoming acclimatized to school and other environments outside the family. Boys appear to be more sensitive to interference with physical activities, while girls are stressed by the impact on peer and social relationships. In addition to managing their illness, adolescents must negotiate the normal development tasks of adjusting to physical changes.
and appearance, resolving social, identity, and sexual issues, choosing a peer group, becoming self-sufficient and independent, and planning for the future. Illness in adolescents can impact autonomy and the development of independence, peer interactions, and intimate relationships. Continued dependence on parents and other adults can be significant. Delayed physical and sexual maturation or physical disfigurement may affect peer relationships and identity formation. The development of appropriate self-esteem in chronically ill children may be negatively impacted by the physical and psychological stresses associated with being ill (Dingle and Sexon, 2004).

In addition to negotiating the challenges that are characteristic of normative adolescent development, adolescents with chronic illnesses and their families must meet the demands of managing their disease. Indeed, chronic illness management is often at odds with normal adolescent strivings, placing considerable stress on both the adolescent and the family. Moreover, with some chronic conditions, adolescents are more likely to exhibit adjustment problems (Lavigne and Faier-Routman, 1992), including higher levels of internalizing symptoms (e.g., depression, suicidal ideation, and anxiety), social withdrawal, and lower levels of self-esteem than comparison children (e.g., asthma [Padur et al., 1995], cystic fibrosis [Thompson et al., 1995], diabetes [Goldston et al., 1997], sickle-cell disease [Thompson et al., 1995], and spina bifida [Ammerman et al., 1998; Appleton et al., 1994; Blum et al., 1991]). With respect to cognitive development, adolescence is associated with advances in problem-solving ability. However, these advances may not translate into improvement in disease management among adolescents. Indeed, declines in adherence to medical regimens on entering adolescence have been a consistent finding across chronic illnesses (Quittner et al., 2000).

Adolescents with a chronic illness and their parents must manage these major developmental tasks even while the exigencies of the illness may exert a strong pull away from sexuality, dating, separation, autonomy, social time with peers, education or vocational preparation, and the overall goal of independence. Adolescence is an unstable phase of life under normal
circumstances, with identity formation proceeding with the starts and bumps and stops of experimentation. It comes as no surprise to most clinicians that the volatility of mood and behavior associated with the adolescent stage of development affects the teen's handling of the illness and vice versa (Goodheart and Lansing, 1997).

The adolescent, who already is undergoing major physical and developmental changes, is extremely vulnerable when illness occurs. Chronic diseases can be associated with changes in mobility, energy level, social and peer interactions, physical appearance, self-esteem, and cognitive function (Abraham et al., 1999). These changes can affect overall development of the adolescent and the severity of the chronic illness. In addition, families with chronically ill adolescents are likely to struggle with feelings of depression, guilt, anger, and frustration.

Chronic illness poses a challenge to normal adolescent development. This development is further affected by the stage of illness such as initial diagnosis, chronic and terminal phase, and the nature of the chronic disease including visibility, severity, and disability (Abraham et al., 1999).

Adolescence is a pivotal period of development with respect to health and illness, even when chronic illnesses are congenital or begin in childhood (e.g., spina bifida, Type 1 diabetes), the manner in which the transition from childhood to adolescence to young adulthood is negotiated has important implications for disease outcomes throughout the remainder of the life span.

Puberty may be the time when adolescents are most at risk of chronic illness negatively affecting development. Early adolescents are especially vulnerable, owing to the cumulative effects of changes in body contour, relationship patterns, and school transition (Alsaker, 1996). Ben-Sira (1984) reported that the afflicted adolescents are often unable to cope with the additional nonnormative stressor of the chronic disease. Pointing out the strong impact of the disease on adolescents' day-to-day life, Jamison et al., (1986) even suggested an interruption of normative development in diverse tasks that may result in a "developmental breakdown."
There are variety of reasons to expect increased difficulties in successful tackling the developmental tasks, for one having a chronic illness may be associated with increased school absence, because of the illness itself or because of treatment and medical appointments (Weitzman, 1986). Second, academic or vocational performance may be influenced by fatigue, pain, or medication (Cowen et al., 1984). Third, a chronic condition may alter or restrict social interactions (Gortmaker et al., 1990). It has been well documented that chronic illness discourages adolescents from developing close peer relationships (Connolly et al. 1987; McAnarney, 1985). Chronically ill adolescents have fewer friends (Boyle et al., 1976), are less likely to date and have sexual intercourse later than healthy peers (Sinnema, 1986). A fourth factor is that many chronic illnesses are associated with altered physical functions and appearance. Combined with social isolation, this may lead to an altered self-concept (Dean and Lin, 1977). Finally, there is also evidence that parents of adolescents with a chronic illness exhibit different forms of parenting and expectations. Constant parental monitoring and overprotection may hinder the normative transition of separating from the family and becoming more oriented toward peers (Cappelli et al., 1989). Some studies have even demonstrated a "regressive pull" associated with the illness, whereby adolescents become more dependent and childlike (Hamlett et al., 1992). Although these difficulties are common for a variety of illnesses (Pless and Perrin, 1985), their incidence and extent may depend on the type of chronic condition, in particular the severity and visibility of the disease (Yule and Rutter, 1970).

Beyond the Psychosomatic-Organic Illness Dichotomy A Biobehavioral Continuum of Illness

The organic-psychosomatic dichotomy is rendered obsolete by recent scientific advances in the realm of psycho-neuroimmunology and behavioral medicine (Ader et al., 1991; Weiner, 1992). According to Wood (1995), the bio-behavioral continuum of disease suggests that all diseases have both biological and psychological influences, and that these influences interact to affect the disease, but that they may have differential levels of contribution,
depending on the disease or life circumstance. Therefore, stressful (or supportive) family process may either exacerbate (or buffer) the impact of psychosocial factors on psychological and/or physical disease. Hence a more useful approach is a systems paradigm that assumes mutual influence of social, psychological, and physical factors in all aspects of health and illness. Within this systems framework one could construct a continuum of disorder that varies according to the relative proportions of psychological and physical influence on the disease (Figure 2). At one extreme would be disorders with relatively strong psychosocial influence, such as functional abdominal pain. At the other extreme would be disorders such as neuromuscular disease. Diseases such as asthma or diabetes might range anywhere in between, depending on the relative contribution of psychosocial and physical factors in the course of illness for a particular patient.

**Psychosocially Manifested Disease**

![Psychosocial Influence Diagram](image)

**Physically Manifested Disease**

Fig. 2: A Biobehavioral Continuum of Disease (Wood, 1995)

**BIOPSYCHOSOCIAL BALANCE**

Each illness has its own particular psychosocial and developmental challenges and sequelae, whether episodic or chronic, progressive or life threatening (Rolland, 1984). Despite the unique characteristics of each disease, there are developmental and biopsychosocial features that childhood illnesses have in common (Hobbs et al., 1985), which provide the basis for a
general integrated treatment model. Indeed many of the same issues hold true for chronic mental and emotional, as well as physical, illness, and the model presented herein can be applied to them as well (Anderson et al., 1986). Issues include, but are not limited to: (a) the tendency of chronic illness to impede psychosocial well-being and development of the patient; (b) the emotional and financial stress and time demands on the family or caregiver system; (c) the necessity for the family and social structure to change to accommodate to the demands of the chronic illness; (d) the tendency for maladaptive family or caregiver patterns to interfere with disease management, either through poor coordination with medical care or by direct influence on the disease process through stress-mediating psychophysiological pathways (Gottman et al., 1989; Wood et al., 1989) and (e) the tendency for chronic illness to disrupt school and peer functioning.

According to Wood (1995), the developmental biopsychosocial approach assumes that the well-being of the patient depends on a dynamic balance among three levels of functioning-individual physical functioning, individual psychological functioning, and family-social functioning-which at times may be in competition (Figure 3). This balance is relevant for health and illness at all ages but is particularly critical during childhood and adolescence when biopsychosocial imbalances can arrest or delay development and thus have dramatic and far-reaching consequences.

![Fig.3 Biopsychosocial Balance of Quality of life (Anderson et al, 1985)]
Introduction

According to Wood (1995) imbalance can occur in several ways. Family (or other social context) patterns optimize medical management of physical well-being, while seriously undermining the child's psychosocial functioning and development. For example, frequent monitoring of blood glucose for a diabetic child may optimally control the disease but may also constrict the child's peer and social interaction, thus impairing development in this domain.

Another common imbalance occurs if emotional development and psychosocial functioning of the child patient proceeds to the detriment of physical. One kind of imbalance can occur when particular well-being when, for example, medical treatments are chronically neglected in favor of academic or social functions.

From the perspective of the family, patterns that optimize the child's medical management and psychosocial functioning may severely impair aspects of the family functioning. For example, a marriage can be neglected, or even sacrificed, to provide intensive caretaking for the ill child or siblings' needs may remain unappreciated and unaddressed. Alternatively, failure of family patterns to accommodate to the child's illness may support ongoing family functioning but medically or psychosocially endanger the child. The developmental biobehavioral systems framework presented in the following section can support the therapist in attending to this dynamic interplay of processes while guiding assessment and intervention.

According to Wood (1995), the shift toward self-management of chronic illnesses picks up momentum during adolescence. However, the transition to full responsibility for the management of the medical and psychosocial aspects of a child's illness will be smoother if it is part of a gradual shift toward independent self-care that has been taking place all along. Again balance in boundary permeability is key in this process. Sometimes families and health care providers retain too much responsibility for the disease and thus maintain diffused boundaries. Alternatively, they may abdicate responsibility to the adolescent prematurely and thus maintain impermeable boundaries. Not infrequently, adolescents will demand this control as part of their general
attempt to take charge of their destiny, this is not in itself inappropriate. However, a common error is to hand over responsibility to adolescents because of their chronologic age or in response to the intensity of their demands for control. This is not wise. Adolescents must demonstrate through their behavior, not through argument, that they can manage their illness responsibly. But to do so, adolescents need to have some aspects of self-care given over to them to demonstrate their mastery. At times, disease management can become the focus around which adolescents attempt to rebel during the process of individuation. Usually, this can be prevented if the process of increasing self-care has been part of the ongoing treatment. Establishing a new balance of autonomy and belonging in the family requires movement in the direction of firmer boundaries and increased independence for adolescents. This is understandably difficult for chronically ill adolescents and families to negotiate. These families are accustomed to a great deal of involvement and diffuse boundaries and thus may lack confidence that their adolescents will be able to manage their illness on their own. This may eventuate in an intense struggle between the adolescent and his or her parents, which can be eased by supportive intervention of the primary health-care provider or the systems therapist. Occasionally, parent-adolescent struggle over the illness is part of other dysfunction in the family or is indicative of emotional disorder in the adolescent or other family members. If this appears to be the case, prompt and intensive intervention is warranted, as this can be a very dangerous situation for a medically ill child. (Boxer et al., 1988).

As Wood (1995) puts it very aptly that adolescence is a particularly crucial stage for chronically ill youngsters because this is the time when identity formation is a primary task. Care must be taken to encourage the adolescent to develop a firm boundary between the disease and his or her self-identity, i.e. child or adolescent should neither be referred to nor think of himself or herself as an “asthmatic” or “diabetic,” but rather as a person who has asthma or diabetes. Parents, health-care providers, and school personnel can assist healthy identity formation by striking a balance between firm limit...
setting and nurturance, while expecting the chronically ill adolescent to function as normally as possible.

**Following chronic disorders were taken up for the present study**

1. **Functional Gastrointestinal Disorders** which included Irritable Bowel Syndrome, Functional Constipation and Recurrent Abdominal Pain
2. **Respiratory Disorder** which included Asthma
3. **Skin Disorders** which included Acne and Atopic Dermatitis.

**GASTROINTESTINAL DISORDERS**

Throughout recorded history, and alongside structural diseases of the intestinal tract: are maladies that have produced multiple symptoms of pain, nausea, vomiting, bloating, diarrhea, constipation, or difficult passage of food or feces (Drossman, 1993). Although structural diseases can be identified by pathologists and at times cured by medical technology, the nonstructural symptoms that we describe as “Functional” remain enigmatic and less amenable to explanation or effective treatment. Often considered “problems of Living.” There are physiological, intrapsychic, and sociocultural factors that amplify perception of these symptoms so they are experienced as severe, troublesome, or threatening, with subsequent impact on daily life activities. Those suffering from such symptoms attribute them to an illness and self treat or seek medical care. Traditionally trained physicians them search for a disease (inflammatory, infectious, neoplastic and other structural abnormalities) in order to make a diagnosis and offer treatment specific to the diagnosis. In most cases (Kroenke et al., 1989) no structural etiology is found, the doctor concludes that the patient has a “functional” problem, and the patient is evaluated and treated accordingly.

This clinical approach results from a faulty conceptualization of functional gastrointestinal disorders and in the inaccurate, demeaning and potentially harmful implications that some physicians, patients, and general
public attribute to them (Drossman, 2005). Some clinicians feel ill at ease when making a diagnosis of a functional gastrointestinal disorder because they are trained to seek pathology (Drossman, 2001). In a random sample survey of 704 members of the American Gastroenterological Association, (Mitchell et al., 1987) the most common endorsement of a functional gastrointestinal disorder was "... No known structural (i.e. no pathological or radiological) abnormalities, or infectious, or metabolic causes" (81%). Next came "a stress-disorder" (57% practitioners and 34% academicians and trainees), and last was a "motility disorder" (43% practitioners and 26% academicians/trainees (Russo et al., 1999). A more recent survey of international investigators agreed that in their countries, physicians view the functional gastrointestinal disorders as psychological disorders or merely the absence of organic disease and often ascribe pejorative features to the patient (Drossman, 2005). Some physicians deny the very existence of the functional gastrointestinal disorders,(Lea, 2003) whereas others exhibit dismissive or negative attitude towards patients (Dalton et al., 2004). Some physicians may pursue unneeded diagnostic studies to find something "real",(Drossman, 2004) resulting in increased health care costs and possibly inappropriate care (Longstreth et al., 2005). These types of beliefs and behaviours can "delegitimize" the functional gastrointestinal disorders and the patients who experience them.

The first event in health psychology began three decades ago with a paradigm shift that moved away from conceptualizing illness and disease based on a 3-century old reductionistic model of disease in which the effort was to identify a single underlying biological etiology to a more integrated, biopsychosocial model of illness and disease (Engel, 1977; 1980). The former disease-based model had its roots with Descartes separation of mind and body and at the time was a concept that harmonized prevailing societal views of separation of church and state (Drossman, 1993; 1998). What resulted was permission to dissect the human body (which was previously forbidden), so disease was defined by what was seen (i.e., pathology based on abnormal morphology). This approach led to centuries of valuable research producing...
effective treatments for many diseases. The concept of the mind (i.e. the central nervous system {CNS} as being amenable to scientific study or as playing a role in illness and disease was marginalized, however. The mind was considered the seat of the soul, not to be tampered with. This idea seems to have had a profound effect of Western society where mental illness or even the effects of stress on physiological function became less available for study and even stigmatize. More recent scientific studies link the mind and body as part of a system where their dysregulation can produce illness (the person’s experience of ill health) and disease. By embracing this integrated understanding, the bio-psychosocial model allows for symptoms to be both physiologically multidetermined and modifiable by socio-cultural and psychosocial influences.

Early in life, genetics in addition to environmental factors such as family influences on illness expression, abuse, major losses, or exposure to infections, may affect one’s psychosocial development in terms of one’s susceptibility to gut dysfunction- abnormal motility, altered mucosal immunity, or visceral hypersensitivity. Further more, these “brain-gut” variables reciprocally influence their expression. Therefore, a functional gastrointestinal disorder is the clinical product of this interaction of psychosocial factors and altered gut physiology via the brain-gut axis (Jones et al., 2006).

The second change over the last two decades has been the remarkable growth in investigative methods that allow us to quantify these associations for the functional gastrointestinal disorders. Within the gut, motility assessment has advanced (Pandolfino et al., 2006) with regard to the brain, imaging methods using positron emission tomography and functional magnetic resonance imaging offer a window into the central modulation of gastrointestinal function and its linkages to emotional and cognitive areas,(Drossman, 2005). Whereas more standardized psychological instruments permit the categorization and quantification of emotions, stress, cognitions, and health-related quality of life. The use of these modalities in
A third event over the last decade has been the development and release of new pharmacological agents to treat the functional gastrointestinal disorders. These include 5-HT agonists and antagonists as well as other gut-receptor-active agents for constipation and diarrhea, (Evans et al., 2004). These are centrally acting agents to treat stress mediated effects of CNS modulation of the gut, (Sagami et al., 2004) and many others covering a vast array of mechanisms. For better or worse, increasing media attention to these pharmaceutical agents has also heightened awareness of the functional gastrointestinal disorders within the medical community and the general public.

Psychologists have come a long way since the 1980s. The functional gastrointestinal disorders are now recognized as clinical entities. Researchers and clinicians worldwide are more involved with these disorders. Gastrointestinal disorders are very common. They affect 10 to 15 percent of children (Whitehead, 1986).

Functional gastrointestinal disorders are defined as a variable combination of chronic or recurrent gastrointestinal symptoms not explained by structural or biochemical abnormalities (Rasquin et al., 2006).

Functional gastrointestinal disorders are characterized by recurrent or current gastrointestinal symptoms that as yet have no identifiable structural or biochemical basis (Thompson et al., 2000).

FUNCTIONAL BOWEL DISORDERS

Functional bowel disorders are functional gastrointestinal disorders with symptoms attributable to the middle or lower gastrointestinal tract. These include the irritable bowel syndrome, functional bloating, functional constipation, functional diarrhea, and unspecified functional bowel disorder.

IRRITABLE BOWEL SYNDROME (IBS)

Irritable bowel syndrome is a functional bowel disorder in which abdominal pain or discomfort is associated with defecation or a change in
bowel habit, and with features of disordered defecation (Longstreth et al., 2006).

Rome II Criteria of Irritable Bowel Syndrome: (Rasquin et al., 2006)

Diagnostic criteria for irritable bowel syndrome are:

Must include all the following:

1. Abdominal discomfort (an uncomfortable sensation not described as pain) or pain associated with 2 or more of the following at least 25% of the times:
   1. Improved with defecation.
   2. Onset associated with a change in frequency of stool.
   3. No evidence of an inflammatory, anatomic, metabolic, or neoplastic process that explains the subject’s symptoms.

Criteria fulfilled at least once per week for at least 3 months before diagnosis.

Symptoms that are cumulatively support the diagnosis of IBS are 1) Abnormal stool frequency (4 or more stools per day and 2 or less stools per week), 2) abnormal stool form (lumpy/hard or loose/watery stool), 3) Abnormal stool passage (straining, urgency or feeling of incomplete evacuation), 4) Passage of mucus, and 5) Bloating or feeling of abdominal distension.

Physiological Features: Visceral Hypersensitivity has been documented in children with irritable bowel syndrome (Di Lorenzo et al., 2001). It may be related to numerous processes, including infection, inflammation, intestinal trauma, or allergy, and may be associated with disordered gut motility (Mayer et al., 2002). Genetic predisposition, early stressful events, and ineffective patient coping mechanism are compounding factors (Levy et al., 2004).

Epidemiology: In Western countries, irritable bowel syndrome was diagnosed in 6% of middle school and 14% of high school students by using
Rome I criteria (Hyams et al., 1996). According to Rome II criteria, irritable bowel syndrome was diagnosed in 0.2% of children (mean age, 52 months) seen by primary care pediatricians and in 22%-45% of children aged 4-18 years presenting to tertiary care clinics (Caplan et al., 2005; Miele et al., 2004).

Throughout the world, about 10%-20% of adults and adolescents have symptoms consistent with irritable bowel syndrome, and most studies find a female predominance (Saito et al., 2002; Longstreth et al., 2005).

FUNCTIONAL CONSTIPATION

The term “functional constipation” describes all children in whom constipation does not have an organic etiology. Functional constipation is a functional bowel disorder that presents as persistently difficult, infrequent, or seemingly incomplete defecation, which do not meet irritable bowel syndrome criteria (Longstreth et al, 2006).

Rome II Criteria for Functional Constipation (Rasquin et al, 2006)

Must include 2 or more of the following in Child with a developmental age of at least 4 years with insufficient criteria for diagnosis of irritable bowel syndrome:

1. Two or fewer defecation in the toilet per week.
2. At least 1 episode of fecal incontinence per week.
3. History of retentive posturing or excessive volitional stool retention.
4. History of Painful or hard bowel movements.
5. Presence of large fecal mass in rectum.
6. History of a larger diameter stools that may obstruct the toilet.

Physiological features: Functional constipation in children is often the result of repeated attempts of voluntary withholding of feces. Abnormal defecation dynamics or pelvic dyssnergia has been reported in 63% of children.
with chronic constipation (Loening et al., 1987). Progressive fecal accumulation in the rectum eventually leads to pelvic floor muscle fatigue and anal sphincter poor competence leading to fecal incontinence.

**Epidemiology:** Estimates of constipation have varied between 0.3% and 8% in the pediatric population (Loening et al., 1993). It represents 3%-5% of general pediatric outpatient visits and up to 25% of general pediatric outpatient visits and up to 25% of pediatric gastroenterology consultations (Caplan et al., 2005). Peak incidence occurs at the time of toilet training (between 2 and 4 years of age), with an increased prevalence in boys (Di Lorenzo, 2001).

**Recurrent Abdominal Pain (RAP)**

Recurrent abdominal pain is the most common pediatric gastrointestinal disorder (Whitehead, 1986). Recurrent abdominal pain was first described by Apley in the 1950s when he defined the condition as at least 3 episodes of pain in the previous 3 months, severe enough to affect the child’s normal activities (Apley and Naish, 1958). Later he again defined by the presence of at least three discrete episodes of per umbilical pain severe enough to result in a change in activities over a period of at least three months (Apley, 1975). Using this definition, Apley and Naish (1958) found a prevalence of 10.8 percent in a study of 1000 randomly selected children aged 4 to 18 years. Others investigators, using less strict criteria for the diagnosis, have arrived at prevalence figures ranging from 14 to 18 percent (Miller et al., 1974). The prevalence is slightly greater in females (12 percent versus 10 percent, Apley and Naish, 1958). The incidence varies with age, rising until about age 9 and declining thereafter (Ouster, 1972). However long term follow up studies show that approximately a third of the children with recurrent abdominal pain will have similar symptoms as adults, which will in most cases be diagnosed as irritable bowel syndrome (Apley and Hale, 1973; Christensen and Mortensen, 1975). This frequency is significantly greater than would be expected by chance.
Recurrent abdominal pain is one of the most common problems in pediatrics, affecting 15% children (Apley and Naish, 1958; Obey et al., 2000). The prevalence of recurrent abdominal pain in children ranges between 10-20% (Apley and Naish, 1958; Faull and Nicole, 1986). The incidence of organic and non-organic causes of recurrent abdominal pain are variable in different studies (Apley and Naish, 1958; Data et al., 1999; Blain et al., 2000). Children below two years usually have organic cause of recurrent abdominal pain. However, above 2 years only 10% cases have an organic cause (Lucien et al., 2000). Emotional components like stressful life events, school phobia, sibling rivalry, etc, have been attributed as underlying components in non-organic recurrent abdominal pain (Apley and Naish, 1958; Data et al., 1999). Organic causes like Pylori infection, cholelithiasis and parasitic infestations have also been reported (Dutta et al., 1999; Balani et al., 2000). Most of patients were above 3 years of age. Family history of recurrent abdominal pain, single parent, sibling rivalry, school phobia and punishment were associated with non-organic recurrent abdominal pain. Nocturnal enuresis, generalized aches and sleep disturbances were common in patients with non-organic recurrent abdominal pain.

Neither the natural history of recurrent abdominal pain nor the factors that promote a resolution of pain are well understood. Although many children with recurrent abdominal pain are treated successfully by their family doctor (Huang et al., 2000). Recurrent abdominal pain accounts for up to 25% of referrals to tertiary gastroenterology clinics, (Boyle, 1997) and severe refractory symptoms may, on occasion, require hospital admission.

Recurrent pain is estimated to affect as many as 30% of children and adolescents (McGrath, 1990). Recurrent abdominal pain is typical of these conditions, which are characterized by repeated episodes of pain in the absence of identifiable organic etiology.

The physiologic mechanism for the symptoms of recurrent abdominal pain is not definitely known, but the symptoms appear to be due, at least in part, to disturbances in the motility of the distal bowel. Several authors note an
association of the symptoms with constipation and diarrhea (Dimson, 1971; Stone and Barbero, 1970). Kopel et al. (1967) demonstrated that these children show significantly greater amounts of motility in the distal bowel in response to parasympathetic drug stimulation than do normal children or children with ulcerative colitis. Thus motility disturbances of the gastrointestinal tract appear to be more clearly implicated in the path physiology of recurrent abdominal pain than other physiological parameters investigated.

A striking feature of recurrent abdominal pain is the strong family history of chronic pain syndromes, especially gastrointestinal pain. Stone and Barbero (1970) by their physicians as functional and 46 percent of fathers had gastrointestinal disorders.

Recurrent abdominal pain is a prevalent pain disorder of childhood and adolescence with females outnumbering males from puberty onward. Although it remits in a majority of cases, a sizable minority of adults who had recurrent abdominal pain as a child continue to have notable abdominal pain as an adult and about one third of children with recurrent abdominal pain will meet criteria for irritable bowel syndrome as adults.

The symptoms of anxiety, depression, and somatization described in both children with recurrent abdominal pain and their parents may apply to children with functional abdominal pain syndrome and those with recurrent abdominal pain and functional dyspepsia seen in both the primary and specialty care setting (Dorn et al., 2003; Campo et al., 2004; Di Lorenzo et al., 2005).

RESPIRATORY DISORDERS

According to Wright et al. (1998) although consensus has emerged from the clinical, social science, psychological, and biological literature that psychosocial factors affect asthma morbidity in children, their role in the genesis, incidence, and symptomatology of asthma remains are not well understood. Three recent trends in medical research have led both clinicians and investigators to reconsider the role of psychosocial stress in asthma.
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Firstly, efforts to define the etiological risk factors for the development and expression of disease have intensified in the face of rising trends in the prevalence and severity of asthma observed worldwide. Thus far, focus on traditional environmental risk factors has not fully explained these trends. Secondly, evidence evolved over the last two decades of important interactions among behavioural, neural, endocrine, and immune processes provides fresh insight into means by which psychosocial stressors may influence the development and expression of inflammatory diseases (McEwen, 1998). This insight emerged in parallel with our increased understanding of the complex cellular and molecular basis of asthma as a chronic inflammatory disorder (Holgate, 1997). Finally, hypotheses about the substantial role of the social environment and social integration in health and disease in general have gained significant emphasis over the last decade (Taylor et al., 1997).

According to House et al. (1988) prospective epidemiological studies have demonstrated associations between life stress, social position or status, and quality of social relationships – that is, social networks, an individual’s ties to friends, family, work, and community through social and religious groups-and health. According to Busse et al. (1995), there has been a complete paradigm shift that reconsiders the overlap between biological determinates and psychosocial factors in understanding the rising asthma burden.

According to Taitel et al. (1998), asthma is a significant health threat in contemporary society, placing health, social, psychological and economic costs on sufferers, families and carers. The prevalence of Asthma and the severity and frequency of attacks appear to be increasingly world wide (Jain and Golish 1996). According to Kotses (1998) while self management comprises a variety of behavioral components it is believed that effective self management can prevent much of morbidity and mortality caused by asthma.

Asthma, a chronic inflammatory disease of the respiratory airway, is the leading chronic illness of children throughout the world. In Thailand, the prevalence of asthma has increased substantially, from 4.2% of children under 18 in 1987 to 12.7% in 1995 (Vichyanond et al., 1998). Prior studies have
shown that adolescents with asthma appear uncomfortable and report more emotional symptoms and less well-being than those without asthma (Forero et al., 1997). Asthmatic children are also more likely to be depressed than children with other chronic diseases (Bennett, 1994). These problems suggest that the teens might use dysfunctional coping strategies to control, tolerate, or minimize environmental and internal demands and conflicts (Lazarus and Folkman, 1984).

Janmeja (2002) opined that though urbanization has been the cause of asthma, the increase in the incidence has been related to various environmental factors.

Parmesh (2002) reported that allergic respiratory disorders, in particular asthma are increasing in prevalence, which is a global phenomenon. Even though genetic predisposition is one of the factors in children for the increased prevalence - urbanisation, air pollution and environmental tobacco smoke contribute more significantly. The increased prevalence correlated well with demographic changes of the city. A school survey in 12 schools on 6550 children in the age group of 6 to 15 years was undertaken for prevalence of asthma and children were categorized into three groups depending upon the geographical situation of the school in relation to vehicular traffic and the socioeconomic group of children. Group I-Children from schools of heavy traffic area showed prevalence of 19.34%, Group II-Children from heavy traffic region and low socioeconomic population had 31.14% and Group III-Children from low traffic area school had 11.15% respectively. Continuation of study in rural areas showed 5.7% in children of 6-15 years. The persistent asthma also showed an increase from 20% to 27.5% and persistent severe asthma 4% to 6.5% between 1994-99.

Some studies have indicated that asthma has increased by almost 7% during the three decades in most countries. India is no exception (Joshi et al., 1999). An estimated 10% children in India have asthma. There is evidence of a worldwide increase in the incidence and prevalence of asthma among children and adolescents (Sacher et al., 1994) lung function studies.
suggest that the bronchial airways of children have become more hyperresponsive during the last decades (Burr et al., 1989).

There has been an increase in the prevalence of childhood asthma all over the world, including India (Shah et al., 2000).

Shah et al. (2000) conducted a nation wide survey on the prevalence of Bronchial Asthma in children and adolescents. Their results revealed that Akola in Maharahtra and Neyvell in Tamil Nadu has the lowest Wheezing percentage in the 6-7 and 13-14 year age groups. Chenni and Kottayam had the highest prevalence rate of wheezing.

In a study conducted by Chabra et al. (1999), it was found that the prevalence of asthma among children in Delhi (5-17 years) was 1.9% Boys had a significantly higher prevalence of current asthma as compared with girls (12.8% and 10.7%, respectively). A majority of studies, of the prevalence of asthma have found a male preponderance ranging from 1.6:1 to over 3:1 (Mine 1969; 1970 and Dawson et al., 1969).

Asthma is the most common chronic medical condition and a leading health problem, both in prevalence (Asher et al., 2000; Weiss et al., 2000) associated social and physical morbidity (Weil et al. 1999) and societal costs (Sterk et al., 1998) in the United States and worldwide (Mannino et al., 2002).

According to Martinez (1999) pediatric asthma is one of the most common chronic diseases in childhood, often revealing itself before the fifth year of age. Onnis et al. (1997) reported that asthma occurs in about 5%-10% of the children, and asthma prevalence is increasing within Western society. According to Robles et al. (2002) asthma is a physical disease connected with respiratory difficulties, but it also may influence the socialization practices and social development of the affected children. Silverstein et al. (2001) found that children with asthma are more often and longer absent from school, compared to their classmates, although their school performance is similar to that of children without asthma.
Psychosomatic Asthma: The physiological mechanism for psychosomatic asthma has been poorly defined. Alexander developed a model to clarify the roles of psychological factors of disease and disease factors on patient's psychological state (Alexander, 1950). He postulated an interrelationship of three factors: A somatic predisposition; A psychological predisposition; A precipitating event. It was commonly recognized that severely affected asthmatic children who get upset and cry aggravated or precipitated their asthma (French, 1939). French and Alexander postulated that the "significance of childhood asthma was the child crying for mother's breast" (French and Alexander, 1941). Using Alexander's model, asthma is the somatic predisposition, and the child's distress and crying are the precipitating events. One psychopathophysiological mechanism to account for stress-induced asthma is stimulation of the central nervous system via parasympathetic preganglionic efferent fibers to tracheobronchial tree contained in the vagus nerve. This pathway originates chiefly from cells in the dorsal vagal nuclei that are closely related to medullary respiratory center (Netter, 1981). These parasympathetic impulses produce bronchial smooth muscle contraction, glandular secretion, and vasodilation, all associated with the triggering of asthma. Another pathophysiological mechanism to account for psychosomatic asthma is hyperventilation, where in Herxheimer (1946) originally described this entity and introduced the concept of 'spoilt child' with crying induced asthma.

Characteristics of an asthma attack

Typically, there are four elements of an asthma attack as described below (Ramaiah et al., 1999):

i. Contrition of the muscles: The muscles around the bronchi contract and the airways inside the bronchi therefore become narrow. Contraction of the bronchi is called 'bronchospasm'. The severity of bronchospasm varies from person to person and on the severity of the attack. If the attack is more severe, bronchospasm is also more severe. It causes difficulty in breathing, wheezing and cough.
ii. **Increased mucus secretion** :- During an attack of asthma, the glade in the inner lining of the reciprocal passage, secrete large amount of mucus, which is thicker than the normal mucus. Secretion of mucus is a protective mechanism of the body against the irritant that has resulted in asthma. In asthma, the mucus clumps together in the respiratory passages and blocks them partially.

Excessive mucus can also form plugs that completely block very small airways in the lungs. These mucus plugs can be expelled out by coughing. In case there are several mucus plugs, one can have continuous and irritating cough. If appropriate treatment is not taken, the mucus plugs can prolong the duration of asthma attack and increase the risk of infections in the respiratory tract.

iii. **Coughing** : Coughing is a spontaneous reaction of the body to expel excessive mucus in the respiratory passages. One coughs when the pressure built up in these passages explodes with a rush of air. Normally, thin hairlike projections on the inner lining of the respiratory passages remove excessive mucus or irritants that is breathed in. If the secretion are very thick, these hairlike projections cannot expel them and therefore the body responds by coughing. Dry cough results when there are very thick mucus plugs or the smaller airways (bronchioles) are completely blocked and therefore unable to expel the mucus.

iv. **Wheezing** :- Most people think wheezing is main symptom of asthma. You develop a wheeze when the air is pushed through narrowed respiratory passages very forcefully when you breathe out. This is because even the normal process of breathing out involves narrowing of the respiratory passages. If these passages are already narrow, further, the duration of breathing in and out is the same, but during an attack of asthma, the duration of breathing out is longer. Wheezing is like whistling, in which air is pushed out of purposed lips.
It is important to remember that if there is very severe narrowing of the airways, the that flows past a blockage is too little to produce a wheeze. This is absence of wheezing during a very severe asthma attack is a dangerous sign.

Psychological stressors have been associated with the activation of the sympathetic and adrenomedullary system and the hypothalamic pituitary-adrenocortical (HPA) axis. Relatively pronounced HPA activation is common in depression with episodes of cortisol secretion being more frequent and of longer duration among depressed than among other psychiatric patients and normal subjects (Stokes, 1991). Shifts in the circadian rhythm of cortisol have also been found among persons in stressful situations (Stokes, 1998). Chronic stress may induce a state of hyporesponsiveness of the HPA axis.

Whereby cortisol secretion is attenuated, leading to increased secretion of inflammatory cytokines typically counterregulated by cortisol. Furthermore, a state of stress induced HPA hyporesponsiveness in some research subject has been associated with other inflammatory disorders (Buske-Krischbaum et al., 1997). A hyporesponsive HPA axis may explain stress induced exacerbations of asthma in certain subgroups of asthma with particular psychological states. Psychological stress activates the HPA axis resulting in the release of cortisol, which has known anti-inflammatory effects.

Asthmatic subjects frequently have associated underlying psychological distress (depression and anxiety). Development of psychological distress in children has been associated with asthma that is more difficult to manage, requiring higher doses of steroids, (Fritz et al., 1989) more frequent and prolonged admissions to hospital,( Fritz et al., 1989) and greater functional disability (Gustadt et al., 1989) Asthmatics with comorbid psychological symptoms are more often non-compliant,(Creer, 1983) Psychological morbidity has been linked to asthmatic mortality (Sears et al., 1986). Mechanisms linking psychological morbidity and asthma morbidity and mortality are complex and remain largely undefined.
Asthmatic subjects have been characterised by B adrenergic hyporesponsiveness and a-adrenergic and cholinergic hyperresponsiveness (Sears et al., 1986). Defects in the function of the autonomic nervous system have also been demonstrated in psychological states including depression, post traumatic stress disorder, and psychomotor agitation (Charmey et al., 1993).

SKIN DISORDERS

The skin has serious psychological connotations, playing a cardinal role as a sensory organ in socialization processes from early infancy throughout the entire life cycle having central importance as an organ of communication being responsive to a variety of emotional stimuli and greatly affecting an individual's body image and self-esteem. The skin and the central nervous system are embryologically related because the epidermis and the neural plate both derive from the embryonic ectoderm.

It is not surprising then that the existence of a relationship between psychological factors and dermatological diseases has long been noticed and described. Several possible links between psychological distress or psychiatric disorders and skin diseases have been proposed (Rajka et al., 1986; Van Moffaert, 1992). At first, patients with a definite psychiatric disorder may be noticed by the dermatologist because of hypochondria, self-mutilation or skin-related delusions. Second, systemic diseases, such as systemic lupus erythematosus or porphyria, may be characterized both by skin lesions and psychiatric symptoms. Third, drugs used to treat dermatological diseases (e.g. corticosteroids) may induce psychiatric disturbances, and conversely, psychotropic drugs such as lithium or some antipsychotics may affect the skin. Fourth, psychiatric symptoms may appear in patients with primary skin disease in reaction to disfigurement or perceived social stigma. Last but not least, stress might act as a precipitating factor in the onset or exacerbation of a skin disease through psychosomatic mechanisms.

According to Grossbart, (1993) skin is the one suit we never remove but, like everything else we wear, we change it to fit our mood or occasion. At
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times intimately private and other times blatantly public, skin is the ultimate interface between the self and others, between our inner being and the outer world. It is both the means by which we feel the world and the screen on which we project our personal feelings for the world to see.

Although the skin is often conceptualized as a mere outer coating of the body, it actually contains a wide variety of cells, including sense organs that constantly react to pressure, temperature, and noxious stimulation (Pinkerton et al., 1982). A section of skin about the size of a quarter contains an average of 3 feet of blood vessels, 12 feet of nerves, 25 nerve endings, 100 sweat glands, and more than 3 million cells. It is the largest of human organs. Spread flat, it would cover 20 square feet. Skin provides the first line of defense against microbes, physical trauma, and environmental irritants. The skin maintains roaming immune system cells that engulf invading microorganisms and protect vulnerable tissues against attack (Grossbart, 1993). Further, the skin contains numerous glands, blood vessels, and smooth muscle elements, many of which come under autonomic nervous system (ANS) control. Therefore, emotional stimuli are able to precipitate various skin reactions through autonomic arousal (Pinkerton et al., 1982).

The autonomic nervous system mediates external and internal stimuli into experienced emotionality, affecting various cutaneous components such as vascular blood flow and sweat glands. Some of the more common emotionally induced skin reactions include blushing—a reddening of the skin surface of the face and neck caused by dilatation of cutaneous blood vessels, pallor—a paling or whitening of the skin surface caused by constriction of cutaneous blood vessels, and perspiration—the exudation of fluid by the sweat glands. It has been shown that perspiration directly affects the electrodermal response, which is a change in resistance of the skin to the passage of an electrical current. This phenomenon, the galvanic skin response (GSR), is considered to be an indicator of emotional activity (Pinkerton et al., 1982).
The Importance of Skin as an Organ

According to Koblenzer (1987) the important role of the skin as a pathway between the inner self and the outer environment has too often been unrecognized. The skin is one of the infant's first means of contact with the outside world. Relationships with the mother and other caretakers are built on bodily sensations and skin contact. Stroking and close physical contact provide stimulation and are soothing for the developing infant. It has been hypothesized that these early relationships, which are mediated through skin contact, establish a way for the infant to develop an internalized psychological structure of body image and to learn to regulate self-esteem.

Although skin disorders are rarely life threatening, they are often associated with serious emotional distress (Stangier and Ehlers, 2000). In a study by Hughes et al. (1983), 30% of 196 dermatological outpatients and 60% of 40 dermatological inpatients reported impaired mental health. About 20% of the total sample displayed psychological symptoms severe enough to be categorized as an adjustment disorder. Similarly, Wessley and Lewis (1989) reported that 30% of 173 dermatological outpatients showed clinically relevant psychiatric symptoms, indicating a high impact of the skin disease.

In two recent studies, similar rates of psychiatric comorbidty of 33.4% and 25.2%, respectively, were observed in dermatological outpatient samples (Aktan et al., 1998; Picardi et al., 2000). Rapp et al. (1996) and Reboussin (1999) found that the health-related quality of life of psoriasis patients was comparable to that of patients with other chronic health conditions, including cancer, arthritis, hypertension heart disease, diabetes, and depression.

Koblenzer (1987) gave the following classification for skin disorders:

1. **Classification of Psychocutaneous Diseases**: conditions with clear psychological etiology which would include dermatitis artefacta, delusions as they relate to skin, obsessions and compulsions relating to skin, parasitosis, body dysmorphic disorder, trichotillomania, neurotic excoriations, glossodynia and glossopyrusis
2. **Psychogenic pain syndromes**: conditions in which psychogenic factors are reportedly involved in etiology and maintenance of the disorder. These include urticarias (hives), alopecia (loss of hair), hyperhydrosis (excessive sweating), and erythema (blushing).

3. **Conditions dependent on both genetic or environmental and stress factors**: these include atopic dermatitis (neurodermatitis, eczema), psoriasis, acne.

**Skin Conditions Equally Dependent on Genetic, Environmental and Stress Factors**

Most research examining the interaction between skin disease and psychological factors has focused on three diseases considered to reflect equal contributions of genetic or environmental factors and stress: atopic dermatitis, psoriasis, and acne. These three disorders, although having their own distinct symptoms and etiologies, share the common label pruritic disorders, meaning they are characterized by itching or picking. In addition, patients having these conditions have been studied in similar types of research, focusing on the effect of skin disorders on specific psychological states and social functioning, the relationship between psychopathology and skin disorders, and psychological factors that maintain and exacerbate skin problems.

**ACNE**

According to Miller and Keane, (1987) acne is a common pathological condition of the skin. The term acne is used in conjunction with a number of descriptive labels referring to the size, shape, color, and extent of papules (pimples). Severe acne is most commonly seen in teenagers, having an incidence of 0.5-5% in people ages 15-21, but it can also occur in adults. Fried and Shalita (1992) found that there is great individual variation in the effects of these dermatological conditions on psychological states, often mediated by the severity of the disease, coping ability, age, family and peer support systems, and patients’ perception of their disease.
Acne results from hyperkeratinization and obstruction of the pilosebaceous follicles secondary to androgen-stimulated failure of normal desquamation of the follicular epithelium, androgen-stimulated sebum production, and colonization of the follicles by Propionibacterium acne, and, variably, inflammation (Toyoda et al., 2001).

Although acne affects all ages in Western countries, prevalence starts to increase from the age of 4 years, and peaks at 16 to 18 years when 75% to 98% of the population is affected (Chan et al., 2000).

Acne is the most common of all skin diseases. The condition affects young people at the time when they are undergoing maximum social and physical change and can produce significant psychological scarring.

Purvis et al (2004) found that acne is perceived as a significant health problem by nearly 1 in 7 adolescents. For those with 'problem acne,' effective treatment is available but not necessarily accessible.

Acne is so universally associated with adolescents (80-90% of all teenagers have at least a few lesions) (Hurwitz, 1994; Thiboutot et al., 1995) that both parents and clinicians tend to dismiss it. Unfortunately, that can lead to disaster. Once acne reaches the inflammatory, stage, it can scar the face, chest, or back, potentially for life. Not only can early intervention usually prevent this complication but also it can prevent the psychological scars of acne (Strausburger, 1997).

According to adolescent psychology, most early teenagers are extremely self-conscious about themselves and their appearance, and “saving face” is crucial. In one study, 58% of adolescent patients were upset with their appearance, 75% of adolescent patients were upset with their appearance, 75% felt embarrassed, and over half were actually socially inhibited because of their acne (Krowchuk et al., 1990).

According to Niemer et al (2006) more than a cosmetic nuisance, acne can produce anxiety, depression, and other psychological problems that
affect patients' lives in ways comparable to life-threatening or disabling diseases. Psychological comorbidities in acne are probably greater than generally assumed. Attention should be paid to psychosomatic aspects especially if depressive-anxious disorders are suspected, particularly with evidence of suicidal tendencies, body dysmorphic disorders, or also in disrupted compliance.

ATOPIC DERMATITIS

Dermatitis is a highly generalized term that originally referred to an inflammation of the skin. The most common form, atopic dermatitis, is marked by erythema (redness), oozing and crusting, excoriation (removal of the skin by scratching), and lichenification (thickening of the skin) (Leider and Rosenblum, 1976). It has been estimated that atopic dermatitis affects 7-24 people per 1,000, and accounts for up to 20% of all patients treated by dermatology clinics (Faulstich and Williamson, 1985). Pruritus, or itchiness, is usually intense, and chronicity and recurrences are problematic. Other terms for this disease include neurodermatitis, prurigo Besbier, and atopic eczema (Miller and Keane, 1987).

Atopic dermatitis occurs in two clinical forms: infantile/child and adolescent/adult. The infantile/child form is characterized by blisters, oozing, and crusting with excoriation. The adolescent/adult form is characterized by marked dryness, thickening, excoriation, and possible scarring. The infantile child form is found on the face, scalp, arms, and legs. The adolescent/adult form is distributed on the elbows and knees, hands and feet, and ears. Other terms for this disorder include newodermatitis, prurigo, and atopic eczema (Friedman et al., 1993).

The course of atopic dermatitis varies from mild, single episodes to severe, chronic, recurrent episodes. The infantile form usually becomes milder or disappears after the age of 3 or 4. At puberty and in the late teenage years, recurrences can occur. Of patients with atopic dermatitis, 30% eventually develop allergic asthma or rhinitis (hay fever). Such patients usually have a
family history of atopic dermatitis, asthma, or rhinitis. Atopic dermatitis is usually worse in the winter because of the decrease in humidity. Wool and lanolin commonly irritate the skin of patients with atopic dermatitis, and food allergies can affect them as well (Pinkerton et al., 1982). The disease is known to exacerbate in winter and improve in summer months (Rajka et al., 1986).

Atopic dermatitis is notorious for its recalcitrance and tendency to chronic recurrence and can lead to significant morbidity, social isolation and emotional stress (Sarkar and Kanwar, 2002).

The underlying pathological mechanisms of atopic dermatitis are not fully understood; however, several factors such as genetic disposition, climate, or altered vegetative response are suggested to play a role in this complex multifactor skin disorder (Resaca et al., 1992). King and Wilson (1991) demonstrated a significant relationship between interpersonal stress such as atopic dermatitis-related problems, rigid family structure, or negative communication with significant others might predict symptom severity in children and adults with atopic dermatitis, respectively (Gil et al., 1987; Ehlers et al., 1994).

The disease arises as a result of a complex interplay between various genetic, immunological and environmental factors (Wuthrich et al., 1999). Atopic dermatitis is triggered or exacerbated by interactions between a genetic predisposition and environmental factors (Kristal et al., 2000; Leicht et al., 2001). The environmental factors include (a) physical factors like sweating, climate, warm surroundings, detergents and soap, synthetic or woollen fabrics, cigarette smoke, (b) psychological factors, (c) food items (including tomato, orange and citrus fruits, juice from meat, fish) (d) allergens such as house dust mite, animal hair, pollen, plants and others such as Staphylococcus aureus and release of exotoxins (superantigens) and saliva in small children (Leicht et al., 2001). Majority of cases are associated with a sensitization to environmental allergens and increased serum IgE (extrinsic atopic dermatitis), but about 10-30% of all cases lack any link to the classical atopic diathesis and
are labelled as intrinsic atopic dermatitis (Wuthrich et al., 1999). Atopic Dermatitis affects 5-15% of school children and 2-10% of adults (McHenry et al., 1995).

There is increasing evidence that the prevalence of atopic dermatitis in children has increased over the past 30 years (Kristal et al., 2000; Wollenberg et al., 2000), although the reasons for this increase are unknown. The current prevalence is estimated to be between 10.0% to 15.6% (Wuthrich et al., 1999). Changes in environmental pollutants, breastfeeding pattern, increased awareness, urbanization and better case detection techniques are some of the reasons cited for this change (Kristal et al., 2000). A similar trend has been observed in India over the past 30 years (Dhar, 1999). In an Indian study from Bihar (Sinha, 1972), the overall incidence of atopic dermatitis was 0.38% of the total number of cases of skin diseases; of these, 38% had "infantile atopic dermatitis". In another study done two decades later, atopic dermatitis comprised 28.46% of the total pediatric skin diseases (Diepgen et al., 1992). Most of the Indian children develop the disease in infancy (Diepgen et al., 1992). Although females outnumber males with a ratio of 3:2 (Rajka, 1989), male preponderance has also been observed both in India and the west (Dhar et al., 1989; Rajka, 1989).

Atopic Dermatitis affects 2-10% of the adult population (Holden et al., 1998; Mark, 1991). Onset tends to occur in early childhood but atopic dermatitis may occur at any age. Environmental factors and psychosocial stress have been implicated in its exacerbation (Holden et al., 1998; Schmied et al., 1991; Schulz et al., 1996). It has been estimated that patients with atopic dermatitis account for 30% of dermatology consultations in primary care and up to 20% of all referrals to dermatologists (Holden et al., 1998).

Models of Psychosomatic Dermatological Disorders

Three basic theories have influenced the etiology and course of Psychosomatic Dermatological Disorders viz. Psychoanalytic model, Behavioral model and Stress Diathesis model:
Psychoanalytic Model (Tovian, 2002)

Freud and his followers in the psychoanalytic movement viewed psychosomatic conditions as the outward expression of inner unconscious conflict (Koblenzer, 1987). Conversion symptoms, in particular, were viewed as a representation of the patient’s unconscious conflicts and the compromise made when unacceptable thoughts or wishes were repressed. The location of a dermatological lesion was hypothesized as having symbolic meaning for the patient; dermatitis on the hands, for example, reflected possible conflict over masturbation. One clinician, writing about his research with dermatology patients, stated that symptom formation “occurs when an aggressive impulse is warded off and this energy is discharged into the pathway of organic functioning” (Musaph, 1969). He cited his belief that factitial dermatitis (self-inflicted skin lesions) is influenced in part by “sexualized aggressive feelings originally aimed at key figures from the first years of life.” Spitz (1965) concluded that chronic eczema resulted from the “infant’s libidinal and aggressive drives which normally would be discharged” in the course of the handling by the mother but were blocked from being discharged. To the best of our knowledge, although the psychoanalytic approach has been the dominant approach in the clinical dermatological literature, few if any empirical or experimental studies have tested these theories.

Behavioral Model (Tovian, 2002)

The second influential model of psychosomatic disease, the behavioral model, has focused more on the course of a dermatological condition than on etiology. In this model, psychosomatic dermatological conditions are thought to be influenced by reinforcement of maladaptive behaviors. Most of the research based on this theoretical approach has focused on the treatment of patients with compulsive scratching (Gil et al., 1988). Scratching episodes are viewed as being inadvertently reinforced by the outside world as well as by the temporary relief afforded by the scratching behavior itself. Behavioral or social learning factors are seen as one important factor in a complex disease process. In addition, in childhood dermatological conditions, a parent’s
attention to the child's scratching episodes may serve as an important maintaining variable for scratching (Gil et al., 1988).

**Stress Diathesis Model (Tovian, 2002)**

The third model of psychocutaneous disease is the diathesis-stress model. According to this model, genetically vulnerable individuals may develop dermatological diseases under conditions such as exposure to allergens and psychosocial stressors (Arnett et al., 1991). Clinicians have hypothesized that stress can alter physiological processes and lead to disease. Stress can be defined as resulting from either major life events, such as marriage, divorce, or the death of a family member, or an excess of minor life events, such as numerous daily hassles. Stress has been shown to affect bodily processes, causing increased sympathetic arousal, peripheral vascular changes, liberation of histamine in the skin, and a lowered itch threshold (Fielder and Arnett, 1985).

Dermatological diseases represent a broad range of disorders with wide-ranging implications. In 1990, it was estimated that there were more than 44 million annual visits for dermatological complaints and more than $5 billion was spent for dermatological services, hospitalizations, and drugs for skin diseases. In that same year, it was estimated that more than 2 million people in the United States, from ages 1 to 74, had a skin condition that severely limited their employment or daily activities at home or school (Zanily, 1990). Given these implications, comprehensive understanding and treatment of dermatological disorders requires a bio-psychosocial perspective in which health psychologists can play an important role.

From the above it can be concluded that chronic disorders are protracted or even lifelong, medical treatment is impotent to cure them or often to control their symptoms, and psychosocial factors have a strong influence.

Eiser (1990) suggested that personal experience with illness accounts for the increased complexity in children's understanding of
illness rather than a series of set, developmental stages. Since it is generally accepted that health beliefs are often formed during childhood and may remain lifelong, their importance cannot be underestimated (Moss-Morris and Paterson, 1995; Paterson et al., 1999).

Adolescence, a period of psychic reorganization, which allows for new adjustments in order to face future life and reorganize experience of the past, is one of the critical phases of existence. For the adolescent with an infirmity or chronic illness, and for his family, there exist specific problems in addition to those encountered by a healthy adolescent. The painful realization of social, professional and relational barriers is reactivated. The feeling of failure and helplessness, the impairment of self-esteem, and anger at being the victim of the unfairness of destiny, represent a supplementary affective burden for the adolescent and his family. This results in a risk of deterioration, either towards affective and social withdrawal expressed by over adaptation and weakening of psychic functions, or towards auto aggressive acting-out or various forms of marginalization (Moorjani et al., 2006).

Unfortunately, much of the research on the impact of illnesses and effective interventions is hampered by a lack of well-controlled studies. Obtaining an accurate view of psychological and social variables such as intrapsychic distress, the emotional impact of the disease, self-esteem, social functioning, and peer relationships has been difficult. Many of the studies have not obtained information directly from the involved children. Much of the information available on children with chronic diseases and their families have focused on describing the problems and interventions associated with particular diseases. There has been more of a trend to examine chronic illness in general, based on the belief that the similarities across diseases, such as the onset and course, potential fatality, degree of incapacitation, visibility, and social issues are significant factors in understanding the impact of chronic illness. Also, recent research has focused on understanding the personal and
environmental factors that impact adjustment to chronic illness and functioning (Dingle and Sexon, 2004).

Most affected children and families appear to manage well, demonstrating resilience and effective adaptation. However, chronic illness usually has a significant effect, with some of the mediating variables being the child's age, gender cognitive abilities, family functioning, type of illness and the impact on daily life (Dingle and Sexon, 2004). Review of literature strongly suggests that chronically medically ill children and adolescents do have a higher risk of having a poor mental health but what's really fascinating is why not all chronically ill adolescents break down. It is this area that needs to be explored so that protective factors that mitigate the impact of such illnesses on the self and families of chronically ill adolescents can be identified and the information may be used for helping those adolescents who are at higher risk for showing higher psychopathology. Therefore aim of the study was to compare the chronically ill adolescents scoring high on mental health with chronically ill adolescents scoring low on mental health on, Depression, Perceived Social Support, Perceived Parental Bonding Dimensions, Measures of Stress, Ways of Coping, Eysenckian Personality Dimensions, Self Esteem and Family Environment Dimensions viz. Relationship Dimensions, Personal Growth Dimension and System Maintenance Dimension. In addition gender differences amongst the chronically ill were also compared.