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"A STUDY OF PSYCHIATRIC MORBIDITY AND STRESSFUL LIFE EVENTS IN PSORIASIS"

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CERTIFICATE

This to certify that the Dissertation entitled **"A STUDY OF PSYCHIATRIC MORBIDITY AND STRESSFUL LIFE EVENTS IN PSORIASIS"** is a bonafide record of work done by Dr.N.BALASUBRAMANI in the department of psychiatry, Thanjavur Medical College, Thanjavur, during his Post Graduate Course from 2008 to 2011. This is submitted as partial fulfillment for the requirement of **M.D.,** Degree examinations – Branch –XVIII (Psychiatry) to be held in April 2011.

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DECLARATION

I, Dr. N.BALASUBRAMANI, solemnly declare that the dissertation titled **"A STUDY OF PSYCHIATRIC MORBIDITY AND STRESSFUL LIFE EVENTS IN PSORIASIS"** is a bonafide work done by me in Raja Mirasudhar Hospital, Thanjavur Medical College, Thanjavur, during April 2010 – August 2010 under the guidance and supervision of Professor **Dr.S.ILANGOVAN, M.D., (Psychiatry).**

This dissertation is submitted to **"The Tamilnadu Dr. M.G.R. Medical University, Chennai",** Tamilnadu as a partial fulfillment for the requirement of **M.D** Degree examinations – Branch –XVIII (Psychiatry) to be held in April 2011.

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CONTENTS

ABBREVIATIONS

CPD	:	Current Psychiatric Diagnosis
5-HT	:	5-Hydroxytryptamine
HPA axis	:	Hypothalamic Pituitary Adrenal axis
CNS	:	Central Nervous System
ACTH	:	Adrenocorticotrophic Hormone
NP	:	Neuropeptides
SP	:	Substance P
NGF	:	Nerve Growth Factor
TNF-α	:	Tumor Necrosis Factor- alpha
IL	:	Interleukin
PUVA	:	Psoralen and Ultraviolet A radiation
NK Cells	:	Natural Killer Cells
CRH	:	Corticotrophin Releasing Hormone
ICD-10	:	International Classification of Diseases and Related Health Problems-Tenth Revision
DSM-IV-TR	:	Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition-Text Revision

INTRODUCTION

Psychosomatic medicine emphasizes the unity of mind and body and the interaction between them. The general notion is that psychological factors are important in the development of all diseases. The history of psychosomatic medicine has its roots in ancient beliefs that the body can be affected by external forces. For example, in Bible (Isamuel 5:4-38) 'Nabal' has been regarded the first recorded psychosomatic death from myocardial infarction. 'Walter canon' in the early part of the twentieth century conducted first systematic study of the relation of stress to disease. Harold Wolft, Hans selye, Helen Deutsch, Adolph Mayer, Leven Eisenberg were among the few who contributed much to the psychosomatic medicine.

According to the contemporary psychiatric research, Mind or body responds not only to biological factors but also to the social factors.

Psychosomatic medicine includes a wide range of diseases, but the most common diseases include those affecting the gastro intestinal, respiratory, endocrine and cutaneous system.

A relationship between dermatological conditions and psychological factors has long been observed. It has been estimated that approximately a third of the patients presenting with dermatological disorders have some

psychological comorbidity (Rostenberg, 1960). Several possible mechanisms explain this association. The dermis and brain share a common embryological origin. Also, because the skin is exposed to view, dermatological conditions that affect appearance may elicit reaction from other people that has impact on the sufferer (Van moffaert, 1992).

The term psychocutaneous disorder describes several distinct psychiatric disorders in which the skin is affected. Koblenzer (1999) has proposed that these conditions can be loosely grouped into:

- Psychiatric disorders in which the skin is the focus of symptoms.
- Dermatological disorders in which psychological distress contributes to the degree of severity.
- Psychiatric disorders secondary to chronic dermatological or disfiguring conditions.

SKIN DISORDERS

Among the various psychosomatic diseases, skin diseases are the most important because of the following factors

i) Skin does more than presenting one's face to the world. As our most ancient interface, skin retains the ability to respond to both exogenous and endogenous stimuli, sensing and integrating

environmental cues while transmitting intrinsic condition to the outside world (Richard 1988).

ii) Sulzberger (1983) stated that of all illnesses, skin diseases affect the mind the most and can be a great handicap in work and social settings. The recognition and management of psychological factors have become part of dermatological practice because of the complex interaction between the skin and psyche.

Psoriasis

Psoriasis is an inflammatory, non infectious proliferative disease of the skin characterized by chronic well defined scaly plaques, predominantly on the extensor aspect of the body and scalp. Incidence may range from 0.1-2.8% (Ginsburg, 1989).

The disease can virtually affect any age group. The course of the disease is unpredictable, but it is usually chronic with exacerbations and remissions.

Exact etiology is unknown but the factors involved may be genetic, biochemical and immunopathological ones. Precipitating factors include trauma, infection, sunlight, drugs and emotion. Various types like palmoplantar, psoriasis vulgaris, pustular, guttate, and elephantine and erythrodermic varieties have been described. Treatment is mainly in the form of topical steroids, PUVA, methotrexate and tazoretene and retinoids.

Although many skin diseases produce psychological morbidity, only psoriasis is chosen because,

i) Prevalence of psychiatric morbidity is high in psoriasis and only few Indian studies are available. (Mattoo, sharma 2001).

ii) Stressful life events may exacerbate psoriasis, acne, eczema and urticaria. Among the above mentioned discussions, only psoriasis has shown consistent association with stress.

AIM AND HYPOTHESIS

AIM

The aim of the study is to know the prevalence of psychiatric morbidity and stressful life events in psoriasis, to correlate with socio demographic variables and to know their clinical relevance.

HYPOTHESIS

- Prevalence of psychiatric disorders are high (especially depression) in patients with psoriasis.
- Stressful life events are common in patients with psoriasis, especially events occurring within a year.
- Psychiatric morbidity is high in psoriatic patients, who are exposed to more stressful life events within a year.
- Psychiatric morbidity is more common in patients with long duration of psoriasis.

REVIEW OF LITERATURE

Stress is one of the central concepts of psychiatry. All people share an existential vulnerability to life's difficulties. The classical Greeks would have it, "we are all but a heartbeat away from the disaster". Stress has been invoked as a precipitator or trigger of psychiatric illness, a contributor to considerable mental anguish and a cause of major psychopathology.

The field of Psychodermatology or Psychocutaneous medicine focuses on the interaction between the mind, the brain, and the skin. Skin is not only the largest organ of the body but also an organ of expression, and it responds to emotions with blushing, pallor, piloerection, and perspiration. Brain and skin originate from the same germ layer, the embryonic ectoderm, and are affected by the same hormones and neurotransmitters. Psychopathological factors can play an etiological role in the development of skin disorders and exacerbate pre-existing skin disorders. Dermatology patients suffer from the psychosocial consequences of disfigurement. Psychodermatology as a discipline encourages a comprehensive and humanistic approach to the management of dermatology patients with psychiatric comorbidity.

STRESS AND PSYCHIATRY – HISTORICAL ASPECTS

The term Stress was coined by Hans Selye (1907 to 1982). He observed that many highly diverse ways of perturbing the organism resulted in common physiological responses. He reported that there is a "general adaptation system", a systemic well-orchestrated adaptive response to diverse stressors. He observed that any novelty or perturbation was associated with an elevation of adrenocortical activity, at least transiently, and that if stressors were unremitting, diverse pathological changes would be evident.

The other groundbreaker in the field of stress research was Walter Cannon (1871 to 1945). He was acclaimed for his methodical investigations of the sympathetic nervous system. He also focused on more immediate or short-term responses to stressors. William Harvey in the 17th century and William Osler in the 19th century frequently alluded to the relationship between adverse life events and onset of illness.

PSYCHOLOGICAL MEASUREMENT OF STRESS

Regardless of whether stress is a cause or trigger and regardless of whether one focuses on stress or the factors that affect resilience to stress, the key step is to recognize and in some way quantify its extent.

Approximately 80 years ago, Adolf Meyer suggested that psychiatrists employ a “life chart” in evaluating their patients. The life chart turns out to be a very effective way of eliciting a clinical history. There seems to be association between life events and episodes of illness.

The next step in the evolving field of life events was developed by the fruitful collaboration of Thomas Holmes and Richard Rahe. They felt that commonly encountered stressors would be more useful than taking an unstructured history. The underlying assumption is that all life events, be they positive or negative, impose a demand for adaptation, and that such demands are stressful.

Another characteristic of the Holmes-Rahe approach is that the items are weighted in terms of their adaptational demand. It is not that the high-scoring individual is at risk, but rather that the individual with an increase in life stress units is at risk for any number of health consequences.

PHYSIOLOGIC RESPONSES TO STRESSORS

The body’s reaction to a stressor (be it real, symbolic, or imagined) is to initiate a set of responses that seek to diminish the impact of the stressor. A stressor disrupts an organism’s equilibrium, and the stress response consists of the initiation of physiologic adjustments that seek to react to the stressor, bring about an adaptive response and restoring homeostasis.

a) Neurotransmitter Responses to Stress

Stressors of many kinds activate noradrenergic systems in the brain (most notably in the locus coeruleus) and cause the release of catecholamines from the autonomic nervous system. Prior exposure to chronic stress results in enhanced synthesis of brain norepinephrine. Chronic stress may dampen the autonomic nervous system response to that particular stress but leave the animal more sensitive to the effects of ensuing stressors.

Stressors also activate serotonergic systems in the brain as evidenced by increased serotonin or 5- hydroxyl tryptamine (5-HT) turnover and there may be differences in glucocorticoid regulation of serotonin receptor subtypes, which may have implications for serotonergic functioning in depression and related illness.

Stress also has the effect of increasing dopaminergic neurotransmission in mesoprefrontal pathway.

Over the past two decades it has become clear that amino acid and peptidergic neurotransmitters are also intricately involved in the stress response. Corticotrophin Releasing Hormone (CRH) has been shown to modulate stress-responsive systems that involve glutamatergic, dopaminergic, and serotonergic systems, among others.

b) Endocrine Responses to Stress

In response to stress, Hypothalamic Pituitary Adrenal (HPA) axis gets activated and stimulates the synthesis and releases of glucocorticoids. Glucocorticoids themselves have myriad effects within the body, but their actions can be summarized in the very short term as promoting energy utilization, increasing cardiovascular activity (in the service of the flight-or-fight response) and inhibiting functions such as growth, reproduction, and immunity. The hypothalamic-pituitary-adrenal (HPA) axis is subject to tight negative feedback control by its own end-products.

The stress response can change dramatically depending on the frequency and duration of exposure. This highlights the necessity of specifying these elements when trying to understand the role of stress in clinical psychiatric illness.

PSYCHONEUROIMMUNOLOGY

Researchers have come to appreciate that the immune system is also a key player in stress physiology. There are numerous bidirectional interactions between brain, behavior, and the immune system. Both innate and specific immunity is orchestrated by the release of interleukins or cytokines from immune cells. However, the immunoregulatory processes cannot be fully understood without taking into account the internal and external milieu in

which innate and specific immune responses occur and the interactions of the brain, autonomic nervous system, and neuroendocrine axis with the immune system.

The CNS and the immune system are linked by two major physiological systems, the HPA and the autonomic nervous system composed of sympathetic and parasympathetic branches.

- **Autonomic Nervous System**

Sympathetic release of norepinephrine and neuropeptides Y, together with receptor binding of these neurotransmitters by immune cells, serves as the signal in this hard-wired connection between the brain and the immune system. In addition, sympathetic nerves penetrate into the adrenal gland and cause the release of epinephrine into the bloodstream, which circulates to immune cells as another sympathetic regulatory signal.

Sympathetic activation can also enhance other aspects of the immune response such as the production of antibodies by B cells and the ability of macrophages to release cytokines. Additional studies indicate that sympathetic activation can also shunt some immune system cells out of circulating blood and into lymphoid organs (e.g., spleen), while recruiting other types of immune cells into circulation (e.g., natural killer [NK] cells). In general, activation of Sympathetic Nervous System reduce the immune system's ability to destroy

pathogens that live inside cells (e.g., viruses) by decreasing innate and cellular immune responses, and enhancing or sparing the humoral immune response to pathogens that live outside the cells (e.g., bacteria). Together, these observations play as cornerstone for understanding fundamental, neuroanatomic signaling between autonomic nervous system and immune system.

- **Neuroendocrine Axis**

The other way in which the brain can communicate with the immune system is via HPA axis. Cortisol exerts influence on the actions of various cells involved in an immune response by suppressing the cellular immune response. Indeed a synthetic analog of cortisol is often used to suppress excessive immune system response. Cortisol can also prompt some immune cells to move out from circulating blood into lymphoid organs or peripheral tissues such as the skin. The immune cells can produce neuroendocrine peptides like endorphin, ACTH. This suggests that the brain, neuroendocrine axis, and immune system use the same molecular signals to communicate with one another.

The brain-immune system interactions have a physiological role in the regulation of immunity. Indeed, the release of CRH in the brain alters a variety of immune processes, including aspects of innate immunity, cellular immunity,

and in vivo measures of antibody production. The brain exerts control over immune cells in lymphoid tissue just as it controls other visceral organs through a complex series of coordinated autonomic and neuroendocrine pathways.

BEHAVIORAL AND PSYCHOLOGICAL INFLUENCES ON IMMUNITY

Psychological responses are expressed in neural activity with resultant changes in neuroendocrine and autonomic function. These changes (behaviors and emotions) are capable of altering immunity.

- **Acute Stress and Immunity in Humans**

Acute laboratory stressors (e.g., mental arithmetic) produce profound and rapid changes in the immune system due to the redistribution of immunoregulatory cells from lymphoid organs such as the spleen into the vascular space. Such acute stressors elicit decrease in cellular immune responses and increase in markers of inflammation (e.g., IL-6), which are thought to be mediated by release of sympathetic neurotransmitters and β-adrenergic receptor activation. Individuals who are elderly or who are undergoing chronic stress show exaggerated immune responses to acute stress. They take long time to recover from the administration of stress. Finally, among depressed patients, acute psychological stress leads to exaggeration of

inflammatory signaling pathway, nuclear transcription factor-κB. Depressed patients with more severe sleep disturbance may also be at greater risk for elevated levels of IL-6 and other proinflammatory markers.

- **Chronic stress, Depression and Immunity**

In contrast to the effects of laboratory stress, chronic or naturalistic stressors such as bereavement or caregiving, as well as depression, are associated with reliable decrease of cellular and innate immunity, along with increase in proinflammatory cytokine activity. This is possibly due to downregulation of glucocorticoid receptor signaling. When the stress remits or depressive symptoms resolve, a normalization of natural and cellular immune function occurs. Importantly, genetic variation in the expression of proinflammatory cytokines may play a role, as stress-induced increase of plasma-C-reactive protein is reported to occur only in stressed persons who have the A allele of TNF-α 308 G/A polymorphism.

Heterogeneity in the effects of stress and depression on immunity can be accounted for by factors such as age, gender, ethnicity, health behaviors (e.g., smoking, alcohol consumption) and coping. Depressed patients who have comorbidity for alcohol abuse or tobacco smoking show exaggerated declines of natural and cellular immune responses. Personal characteristics such as coping and personality (e.g., positive affect), which moderate neuroendocrine

and sympathetic activity; also contribute to individual differences of immune responses to psychological stress.

Immune activation leads to changes of peripheral physiology and behaviors that are similar to a stress response. With peripheral immune activation, there is an induction of a pituitary-adrenal response and autonomic activity via central release of CRH. Coincident with these physiological changes, animals show reductions in activity, exploration of novel objects, social interactions, food and water intake, and sexual behaviors, a response pattern that has become known as sickness behaviors.

Human studies have begun to reveal links between peripheral cytokines and behavioral changes. Associations between cytokines and sleep have recently been extended to measures of daytime fatigue. Large doses of cytokines, given as immunotherapy for cancer or hepatitis C, frequently induce sickness behaviors and depressive symptoms, which can be attenuated by pretreatment with antidepressant medications.

Cytokine-induced activation of the HPA axis may represent a risk marker for depression. Physiological activation of the immune system with the release of proinflammatory cytokines leads to increases of depressed mood and anxiety and decreases of memory functions. Administration of the TNF antagonist (e.g., Etanercept), which blocks endogenous levels of

proinflammatory cytokines, has been found to correlate with improvements in depressive symptom severity among 618 psoriasis patients.

PSYCHOCUTANEOUS DISORDERS

Classification

Although there is no single universally accepted classification system of psychocutaneous disorders, the one most widely accepted was devised by John Koo and Chai Sue Lee. It includes five different groupings, which also includes the text revised fourth edition of Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) classification of psychocutaneous disorders.

- **Psychophysiological disorders** are bona fide skin disorders exacerbated by stress (e.g.) Psoriasis, eczema
- **Primary psychiatric disorders** refer to cases without "real" skin disease, but where patients present with serious psychopathology and visible skin lesions that are self-induced (e.g.) Trichotillomania, delusional parasitosis, psychogenic excoriations etc.
- **Secondary psychiatric disorders** refer to cases in which patients develop psychological problems as a result of skin disease and associated disfigurement (e.g.) Vitiligo.

- **Cutaneous sensory disorders** refers to cases in which patients have unpleasant sensations on the skin, such as itching, stinging, burning, or crawling, with no proven skin based etiology and for whom a psychiatric diagnosis may or may not be evident. These are considered to be equivalents of chronic pain syndromes.
- Koo and Lee's classification also includes a separate category to describe the **use of psychotropic medications** in treating certain skin conditions, which may be more efficacious than traditional dermatological treatments.

Psychosocial stress and coping in skin disorders

Most patients are able to make appropriate adjustment to their skin disorder and do not encounter undue distress. However, some patients with chronic skin illness and appearance-altering conditions run the risk of social, psychological, and physical distress. The patient's experience of psychosocial distress is variable and depends on

- The characteristics of skin disorder itself
- The individual characteristics of patients and his or her life situations
- Cultural attitudes related to skin disease (often expressed as stigma)

Characteristics of the Dermatological Disorder

The emotional reaction to a particular skin condition is variably affected by the patient's understanding of its origin. In genetically predisposed conditions like atopic dermatitis and psoriasis, the patient's response may include blaming parents, as well as feeling unfortunate, frustrated, or helpless. The external appearance of skin lesions can lead to different degrees of disfigurement. Associated symptoms of persistent intolerable itching, burning, or pain may add to psychological distress, insomnia, anxiety, and depression. The location of skin lesions might affect the patient's self-consciousness. Lesions directly visible on the face and hands usually cause the greatest concern. The age of onset can effect psychological development especially in children. In adolescents, chronic skin conditions can be a significant blow to self-esteem and image, affecting the maturation of self, sexual identity, and personality. The course of the skin illness, with a chronic relapsing condition and treatment-related side effects, also has a major bearing on patients and their families on a day-to-day basis.

Figure-1

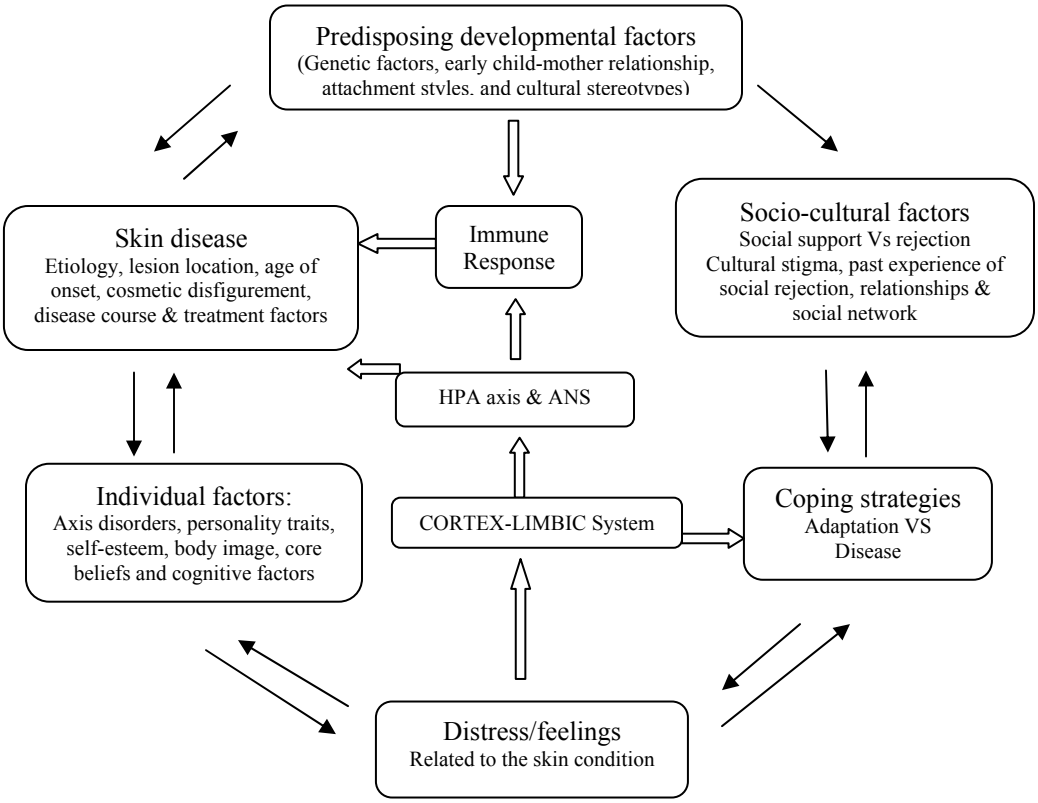


Figure-1 shows psychosocial factors implicated in origin and maintenance of skin- specific affect/distress and systemic adaptation response

Individual Characteristics

Age and sex are important when considering a person's ability to cope with a chronic illness. A young woman suffering from psoriasis is likely to be far more troubled emotionally than an older man with a similar condition. Personality influences a patient's reaction towards illness, subjective experience and coping. The presence of an Axis I psychiatric disorder such as

depression, obsessive-compulsive disorder (OCD), or psychosis can influence the patient's cognition, thoughts, and beliefs about the skin lesions. Depression may increase the sensation of itching in pruritic skin disorder such as atopic dermatitis, psoriasis, and chronic idiopathic urticaria.

PSYCHONEUROIMMUNOLOGY OF SKIN DISEASES

The use of the term psychoneuroimmunology has gained increasing attention since R. Adler and N. Cohen demonstrated behaviorally conditioned immunosuppression. Most of the data suggesting an association between psychosocial stresses and exacerbation of dermatological conditions is derived from anecdotal evidence, case series or studies without rigorous standards. A.Picardi and D. Abeni reviewed much of the literature with scientific rigor and found that evidence for the role of stress in exacerbation of psoriasis, atopic dermatitis, urticaria, and alopecia areata was reliable. The field of psychoneuroimmunology intends to validate the "psychosomatic" link in cutaneous disorders by understanding the potential pathophysiological mechanisms underlying the role of stress in the exacerbation of skin diseases.

Primary sensory stimuli are integrated with corticolimbic input and produce an active recognition at cognitive and subconscious levels. The stress response is determined by the individual's interpretation of stimuli as distressful and not by the nature of stimuli itself.

Immunomodulation

These neuroendocrine and autonomic changes have profound effects on immune regulation by modulatory effects of glucocorticoids, catecholamines, and neuropeptides.

The modulation of the immune system during distress periods may largely depend on the chronicity and quality of stress. Chronic stress tends to induce an immunosuppressive effect, and acute stress leads to immune enhancement with immediate survival mechanisms.

PSORIASIS

The writer John Updike, who had psoriasis himself, so poignantly said about being a person with psoriasis "I am silvery, scaly. Puddles of flakes form wherever I rest my flesh. Lusty, though we are loathsome to love. Keen-sighted, though we hate to look upon ourselves. The name of disease, spiritually speaking, is Humiliation".

Epidemiology and Clinical Features

Psoriasis is a chronic, relapsing skin disease presenting with erythematous, scaling papules, and indurated plaques involving the vasculature as well as the epidermis, arising preferentially on the elbows, knees, and scalp. The clinical presentation takes various forms, some causing nail dystrophies

and arthritis. The morphology of the skin lesion varies from pinpoint plaques to extensive lesions covered with silvery scales or pustular formations.

It affects males and females equally. Psoriasis is hereditary with an age of onset mostly in the early 20s. It affects 1.5%– 2% of the population in western countries. Childhood onset predicts a severe and chronic course and is usually associated with a positive family history. Early onset psoriasis has been associated with greater difficulties with expression of anger, a personality trait that may add to a patient's vulnerability to stress and depression. For most patients, it is a life-long condition with unpredictable relapses (Christophers & Mrowietz 1999; Habif 2004).

The pathogenesis of psoriasis is incompletely understood. Genetic, immunological and environmental factors affect its development and prognosis (Christophers & Mrowietz 1999; Habif 2004). Common trigger factors include physical trauma (Koebner's phenomenon: rubbing and scratching stimulate the psoriatic proliferative process), acute bacterial or viral infections and drugs. Psoriasis can be induced by β-adrenergic blockers and lithium amongst other medications. Lithium induced psoriasis resolves with its discontinuation (Krahn and Goldberg, 1994).

Alcohol ingestion is also a known trigger. A controlled study of Finnish men elicited retrospective data about alcohol intake prior to onset as well as

before the current skin examination, showing that psoriasis patients reported greater alcohol consumption during both periods compared with men with other skin diseases, Psoriasis patients, unlike controls, did not decrease their intake after diseases onset, perhaps because of their emotional distress (Poikolainen, 1990).

Stressful life events are associated with higher levels of Substance P (SP) in the central and peripheral nervous systems of animal models. There is evidence for higher Nerve Growth Factor (NGF) levels in response to stress, which plays a central role in regulating skin innervations and upregulating Neuropeptides (NPs). Several studies indicate that increased expression of NGF in keratinocytes may be an early event in the pathogenesis of psoriasis. NGF stimulates T-lymphocyte proliferation and mast cell degranulation.

Psychiatric morbidity

The connection between psychological factors and psoriasis is largely unexplained. It is not due only to altered neuropeptides in the skin (Pincelli et al. 1994), although stress does increase the neuropeptides content of lesions, with a concomitant decrease in enzymes that degrade neuropeptides, especially mast cell chymase (Harvima et al. 1993). In addition, the concentration in the blood of certain neuromediators, especially β-endorphin, changes during exacerbations (Misery 1997).

Psychiatric morbidity has been shown to be highly prevalent in dermatology patients with an overall prevalence of 40.2%. Self report measures were used for correlation between psychiatric and dermatological morbidity and it was found that 75% of these cases were caused by or closely related to skin diseases (Wessely 1989).

Patients with psoriasis have been reported to have a high prevalence of Generalized Anxiety Disorder and Major Depressive Disorder (anxiety, depression) and Comorbid Personality Disorders. A variety of psychopathological disorders appear to be increased in patients with psoriasis (Fried et al. 1995; Gupta & Gupta 1998). Depression and obsessionality as well as alcoholism are common findings (Koblenzer 1999).

Depression has been shown to be associated with psoriasis. This was significantly higher among inpatients with Psoriasis as compared to Atopic eczema, Acne, Alopecia and outpatients with Psoriasis (Gupta, 1998). Akay (2002) while comparing depression scores using Becks Depression Inventory among Psoriasis, Lichen planus and normal controls found that depression scores were found to be higher in psoriasis (58%) when compared to others (53% & 20%).

Hughes et al (1983) found that 33% of dermatology inpatients and 15% of outpatients had high scores on a standard measure of depression. Further

exploration showed that the symptoms were caused by inconvenience, disfigurement and stigma attached to the disease.

Devrimci – ozugren (2000) also found that patients with psoriasis reported significantly higher degrees of depression and more body cathexis problems than controls. In addition the risk for developing psoriasis increased significantly in patients with moderate and severe depression.

Fried (1995) found that approximately half of the patients were found to have moderate to extreme levels of anxiety, depression and anger both during their flare up of disease and during periods of remission. Patients were also found to have pruritus associated with their flares. Psychologic morbidity was positively associated with length of disease flare.

Pruritus is a common symptom in patients with Psoriasis. In Psoriasis, the severity of pruritus is associated with higher depression scores and a greater risk for suicide. An improvement in pruritus led to a decrease in depression scores.

Anxiety and Stress in Psoriasis

Anxiety is a common reaction to the stress of having a physical illness. It can be pervasive and persistent, mixed with depression and anger, and out of proportion to the condition causing it. The ‘fear of being negatively evaluated’

contributes greatly to the anxiety of patients with Psoriasis, particularly of those with severe disease (Leary et al. 1998).

Many patients are sure that stress triggered their Psoriasis originally and still exacerbates it (Savin 1970). Most publications on the subject support the existence of this association. Yet an aura of doubt lingers on for a variety of reasons.

There is conflicting literature regarding the role of psychosocial stressors in psoriasis. In some patients stress appears to play an important part in the clinical course of this condition. It has been suggested that upsetting life events precede the onset of psoriasis in up to 70% of the cases and relapses in up to 90% (Picardi & Abeni 2001). However, Majority of the studies that have examined this association has been uncontrolled or has had methodological problems. Nevertheless, they provide anecdotal evidence of an association between stress and psoriasis (Picardi & Abeni 2001). Family upsets are the most commonly related events, followed by work or school pressures, and financial worries.

Psoriasis itself acts as a stressor and influences the social and physiological well being of the patients. Stressful life events have been considered possible etiological factors influencing the onset of psoriasis (Zachariae et al, 2004, Jowett, 1983, Ginsburg, 1989). It has also been

suggested that periods with increased disease activity may be preceded by increased distress (Picardi, 2001).

Farber et al (1968, 1974) using a questionnaire survey with initial 2144 patients with psoriasis and then with 5600 patients found that approximately 33% stated that new patches of psoriasis appeared at times of worry, 33% said they didn't and the remaining were uncertain.

Several studies by Farber's group attempt to elucidate a pathway between stress and psoriasis via substance P (Farber 1990, 1991). They suggest that an underlying mechanism is neurogenic inflammation, induced by exogenous or endogenous stimuli, mediated by neuropeptides. Farber et al speculates descending autonomic fibers may trigger antidromatic release of neuropeptides in the skin. Local release of neuropeptides from sensory nerves in the skin in response to stressful stimuli, however, has not been demonstrated, although substance P and vasoactive intestinal peptide (VIP) were significantly elevated in psoriatic lesions compared with non lesional skin and normal control skin.

There is a potential link between neural factors such as substance P and others, mast cell proinflammatory mediators, and cellular inflammatory response as having significance in the stress related exacerbation of many dermatosis.

Treatment

The prevalence of psychiatric comorbidity and emerging evidence for stress-induced exacerbations of psoriasis has led to the development of psychosocial intervention as an important adjunctive therapy in the management of psoriasis.

Fortune et al (2003) assessed clinical severity of psoriasis, psychological distress and other potential confounders of treatment outcome such as skin prototype, family history of psoriasis and alcohol intake before starting PUVA therapy. They found that psychological distress in the form of excessive worrying has a significant and detrimental effect on treatment outcome in patients with psoriasis. Patients with psoriasis who are classified as high- level worriers may benefit from adjunctive psychological intervention before and during treatment.

The psychotherapeutic modalities with evidence for significant clinical improvement include Hypnosis, Meditation, Cognitive Behavioral Therapy, and Guided Imagery Training. Scharloo et al (2000) showed that emotional expression, active coping and seeking social support were associated with improved mental and physical health one year later. This indicates that psychological intervention techniques like Hypnotherapy, Imagery, Relaxation

and Stress management techniques have thus been reported to help patients suffering from psoriasis.

There are limited data on controlled trails of psychopharmacological treatments of anxiety and depression in psoriasis patients and its effect on the course of psoriasis.

MATERIALS AND METHODS

This is a cross sectional study conducted from May 2010 to August 2010 in the Department of Dermatology, Raja Mirasudhar Hospital, Thanjavur Medical College, Thanjavur. This tertiary care hospital caters the rural population of nearly seven districts. The department of Dermatology runs an outpatient clinic for psoriasis every Tuesday and Friday with an attendance of 200 patients per week. All the cases were screened and diagnosed by a consultant dermatologist.

Inclusion criteria

1. Age more than 15 years
2. Patients diagnosed as psoriasis and undergoing treatment in Government Raja Mirasudhar Hospital, Thanjavur.
3. Patients with no history of psychiatric illness before the onset of disease.

Exclusion criteria

1. Patients with other chronic diseases like vitiligo.
2. Patients with history of psychiatric illness before the onset of disease.
3. Patients who were having chronic systemic illness like Diabetes mellitus, and Hypertension which may lead onto Depression.
4. Patients who were on systemic steroids as part of their treatment.
5. Those were not willing and uncooperative for the study.

Tools used

1. Semi structured interview to assess the socio demographic data.
2. ICD-10 (International classification of mental and behavioral disorders-clinical descriptions and diagnostic guidelines, 10th revision, 1992) to assess psychiatric disorders.
3. Hamilton Depression Rating Scale (HAM-D)
4. Presumptive Stressful Life Events Scale (Gurmeet Singh et al 1984)
5. Modified Kuppuswami scale for Socio Economic Status (SES)

Forty five consecutive cases were selected from the Psoriasis clinic and dermatology ward. Initial screening was done to rule out systemic diseases and any history of drug treatment with systemic steroids.

A consultant dermatologist has screened the patients for psoriasis and the diagnosis was confirmed by him.

A proforma consisting socio-demographic and clinical details was completed. These included items such as name, age, sex, hospital no, education, occupation, family income per month, marital status, type of family, history of substance use pattern, family history of mental illness, family history of psoriasis, clinical information regarding symptoms and current management. (Appendix-I)

A clinical interview was conducted to evaluate psychiatric morbidity and the diagnosis was made using ICD-10.

Hamilton Depression Rating Scale was also administered to assess depression in these patients.

Presumptive Stressful Life Events Scale (Gurmeet Singh) was administered to all patients and life events which have occurred during their life time and past one year were recorded with the exact time of occurrence.

Modified Kuppuswamy scale was used to classify socio economic status.

The questions were read aloud to the patients in their mother tongue and were asked to respond.

- **International classification of mental and behavioral disorders (ICD-10, 1992):** first developed by WHO. The tenth revision of ICD-10(1992) based on Clinical descriptions and diagnostic guidelines are commonly used. The chapter V deals with mental and behavioral disorder. Alphanumerical coding scheme, based on codes with a single letter followed by two numbers at three character level is used.

- **Hamilton Depression Rating Scale (HAM-D, 17 item scale):** First introduced by Max Hamilton in 1960, it has since become the most

widely used and accepted outcome measure for evaluating depression severity. The Hamilton Depression Rating Scale is a 17-item scale that evaluates depressed mood, vegetative and cognitive symptoms of depression, and co-morbid anxiety symptoms. It provides ratings on current DSM-IV symptoms of depression, with the exceptions of hypersomnia, increased appetite, and concentration/indecision.

The 17-items are rated on either a 5-point (0-4) or a 3-point (0-2) scale. In general, the 5-point scale items use a rating of 0 = absent; 1 = doubtful to mild; 2 = mild to moderate; 3 = moderate to severe; 4 = very severe. A rating of 4 is usually reserved for extreme symptoms. The 3-point scale items used a rating of 0 = absent; 1 = probable or mild; 2 = definite. The HAM-D was one of the first rating scales developed to quantify the severity of depressive symptomatology. Interpretation of the total scores: very severe, >23; severe, 19-22; moderate, 14-18; mild, 8-13; and no depression, 0-7. The questionnaire is presently one of the most commonly used scales for rating depression in medical research. (Appendix-II)

- **Presumptive Stressful Life Events Scale** developed by Gurmeet Singh et al has 51 items which is based on the consensus a priori method and can be adapted to assess the events in lifetime or within a short span of

time (1-6 months). Singh developed this scale suitable for assessing stressful life events for Indian patients in 1981 by using open-ended questionnaire on a sample of 200 adult subjects. It was based on fruitful collaborations of Holmes and Rahe, who believed that some kind of a list of commonly encountered stressors would be more useful than the relatively unregulated process of taking an unstructured history. After considerable research, they developed a list of 51 life events relevant to Indian conditions, ranging in severity from death of a spouse to going on a pleasure trip/pilgrimage. Scale items are classified into desirable, undesirable, or ambiguous; and personal or impersonal. A cumulative score can be obtained by summing up the individual scores weighed depending upon the stress caused to the individual. (Appendix-III)

- **Modified Kuppuswamy scale for Socio Economic Status (SES)**

  Kuppuswamy scale is widely used to measure the socio-economic status of an individual in urban community based on three variables namely Education, Occupation and Income. The three variables are clearly defined and appropriate scores maintained. Each variable consist of seven categories. According to the total scores obtained in the three variables, the Socio Economic Status are grouped into five classes viz upper, upper middle, lower middle, upper lower and lower. In the present study, Modified Kuppuswamy's SES Scale (updated by

N.Kumar, C.Shekhar, 2007) was used. The authors revised family income per month according to the modification of price index for 2007. (Appendix-IV)

Approval was obtained from the Ethical committee of Thanjavur medical college.

Informed consent was obtained from the patients before participating in the study.

Statistical analysis

Descriptive statistics were computed. Categorical variables were described as frequencies and percentages. The chi-square test was used to compare categorical variables. Comparison of continuous variables was analyzed with independent sample test. A “p value” of less than 0.05 was considered clinically significant.

Data was managed and analyzed using the statistical package for social sciences (SPSS) software version 12.0.

RESULTS

Table-1

Table showing Socio demographic variables among patients with Psoriasis.

Socio demographic variables	Psoriasis patients (N=45)	
	n	%
Age (in years)		
a) 18-44	16	35.6
b) 45-64	23	51.1
c) More than 64	6	13.3
Sex		
a) Male	35	77.8
b) Female	10	22.2
Marital status		
a) Single	0	0
b) Married	44	97.8
c) Widowed	0	0
d) Separated	1	2.2
e) Divorced	0	0
Religion		
a) Hindu	44	97.8
b) Muslim	1	2.2
c) Christian	0	0
d) Others	0	0
Socio Economic Status		
a) Upper	0	0
b) Upper middle	0	0
c) Lower middle	18	40.0
d) Upper lower	27	60.0
e) Lower	0	0
Type of family		
a) Nuclear	36	80.0
b) Joint	5	11.1
c) Extended	0	0
d) Broken	4	8.9

Mean age = 50.1; Median age = 50

Figure-2

Figure showing various age groups among patients with Psoriasis

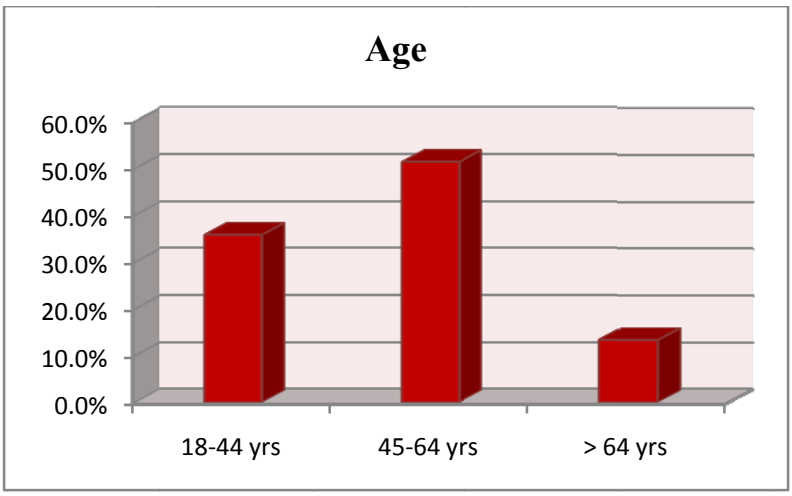


Figure-2 results show majority belong to 45-64 years (51.1%), 35.6% belong to 18-44 years and the remaining 13.3% belong to more than 64 years.

Figure-3

Figure showing sex distribution among patients with Psoriasis

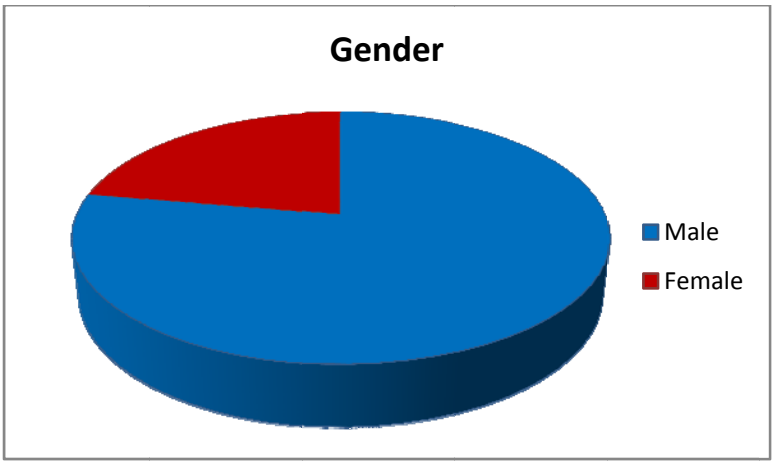


Figure-3 results show 35 were males (77.8%) and 10 were females (22.2%).

Table-1

A total of 45 patients suffering from Psoriasis were evaluated for the study. Age of the patients ranged from 29 to 67 years with the Mean age of 50.1 years and the Median age of 50 years. Among 45 patients, 35 were male (77.8%) and 10 were female (22.2%). Majority (97.8%) belong to Hindu and 2.2% belong to Muslim. 13.3% of the patients educated up to high school / post high school, 35.6% up to middle school, 46.7% up to primary school and 4.4% were illiterate. 13.3% were skilled workers, 40% were agricultural/ clerical and the majority (46.6%) was semi skilled/Unskilled workers. Majority of them (60%) belong to upper lower Socio economic status and the remaining 40% lower middle. Majorities (97.8%) were married and only one patient (2.2%) was separated. Majorities (80%) were living in a nuclear family, 11.1% were living in a joint family and 8.9% belong to broken family.

Figure-4

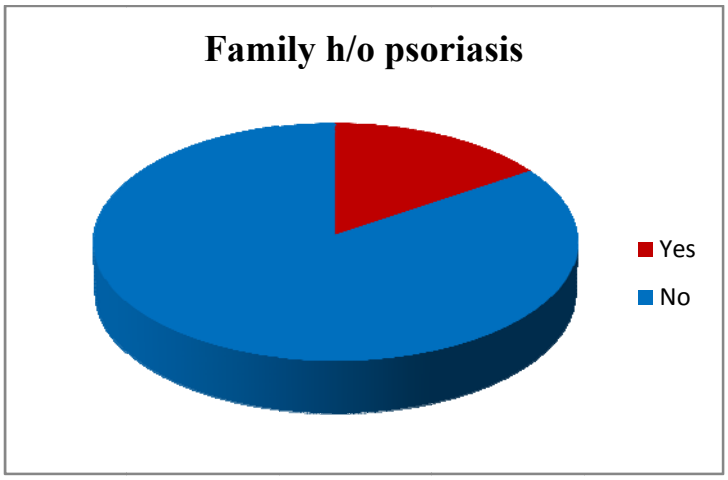


Figure-4 shows 15.6% of the patients had family history of Psoriasis. Majority of them were males (85.7%).

Among 45 patients, about 40 patients (88.9%) gave history of pruritus and only 5 patients (11.1%) did not have pruritus. Among patients who had pruritus, 34 patients (75.6%) reported that pruritus was aggravated by stress.

Table-2

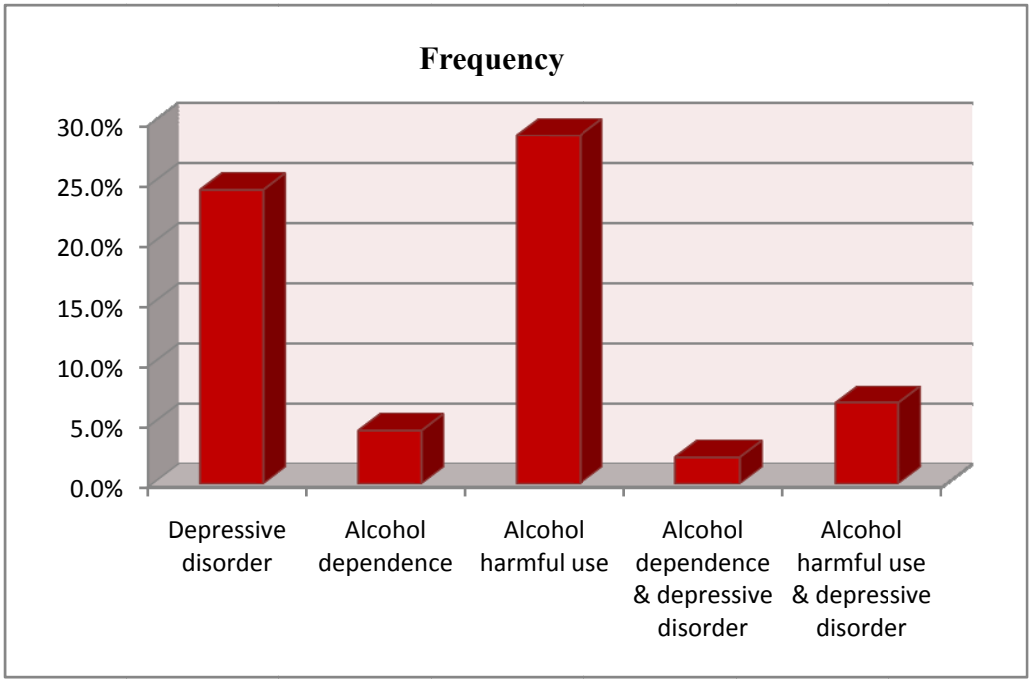
Table showing prevalence of psychiatric morbidity in patients with Psoriasis (N=45)

Psychiatric illness	n	%
Alcohol harmful use	13	28.9
Depressive disorder	11	24.4
Alcohol harmful use and depressive disorder	3	6.7
Alcohol dependence	2	4.4
Alcohol dependence and depressive disorder	1	2.2

Table-2 shows about 30 patients (66.7%) had psychiatric illness. 11 patients (24.4%) were suffering from depressive disorder, 13 patients (28.9%) were alcohol harmful user, 3 patients (6.7%) had both alcohol harmful use and depressive disorder, 2 patients (4.4%) had alcohol dependence and 1 patient (2.2%) had both alcohol dependence and depressive disorder.(Figure-5)

Figure-5

Figure showing prevalence of Psychiatric morbidity in patients with Psoriasis



Psychiatric morbidity

Table-3

Table showing comparison of Socio demographic variable and Psychiatric morbidity among patients with Psoriasis

Socio demographic variables		Patients with CPD		Patients without CPD		Results
		n	%	n	%	
Age in years	18 – 44 45 – 64 Above 65	9 16 5	30.0 53.3 16.7	7 7 1	46.7 46.7 6.7	df = 2 x^2 = 1.618 p = 0.445 p > 0.05 NS
Sex	Male Female	26 4	86.7 13.3	9 6	60.0 40.0	df = 1 x^2 = 4.114 p = 0.043 p < 0.05 Significant
Religion	Hindu Muslim	30 0	100.0 0	14 1	93.3 6.7	df = 1 x^2 = 2.045 p = 0.153 p > 0.05 NS
Socio Economic Status	Lower middle Upper lower	12 18	40.0 60.0	6 9	40.0 60.0	df = 1 x^2 = 0.000 p = 1.000 p > 0.05 NS
Marital Status	Married Separated	29 1	96.7 3.3	15 0	100.0 0	df = 1 x^2 = 0.511 p = 0.475 p > 0.05 NS
Marital life	Cordial Satisfactory Unsatisfactory Strained	8 17 2 3	26.7 56.7 6.7 10.0	4 9 2 0	26.7 60.0 13.3 0	df = 3 x^2 = 2.019 p = 0.568 p > 0.05 NS
Type of family	Nuclear Joint Broken	22 4 4	73.3 13.3 13.3	14 1 0	93.3 6.7 0	df = 2 x^2 = 2.900 p = 0.235 p > 0.05 NS

Table-3 results show statistically significant relationship between sex and psychiatric morbidity among patients with Psoriasis. But, there is no statistical significance between age and psychiatric morbidity. The other Socio demographic variables did not have any significance among Psoriasis with or without psychiatric morbidity.

Figure-6

Figure showing comparison of age and psychiatric morbidity among patients with Psoriasis

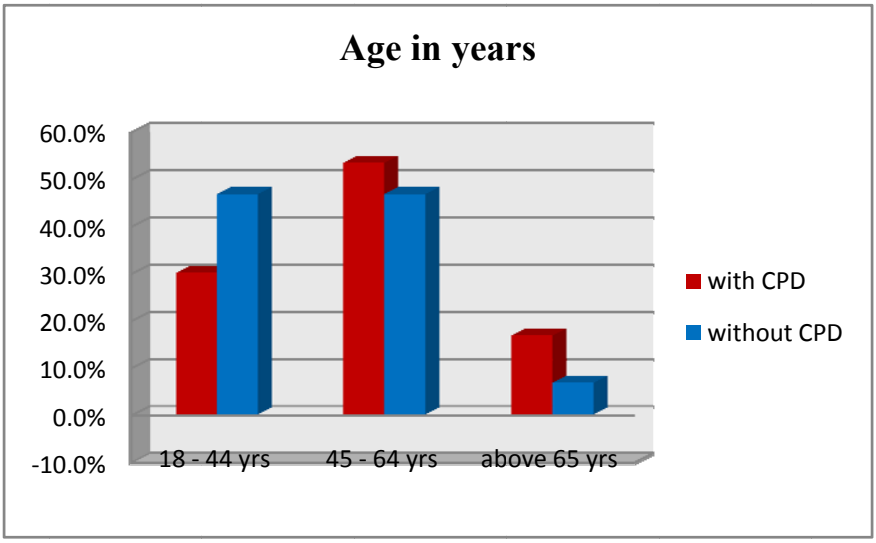


Figure-6 shows patients between the age group of 45-64 yrs had high psychiatric morbidity (53.3%), compared to other age groups.

Figure-7

Figure shows comparison of sex and psychiatric morbidity among patients with Psoriasis

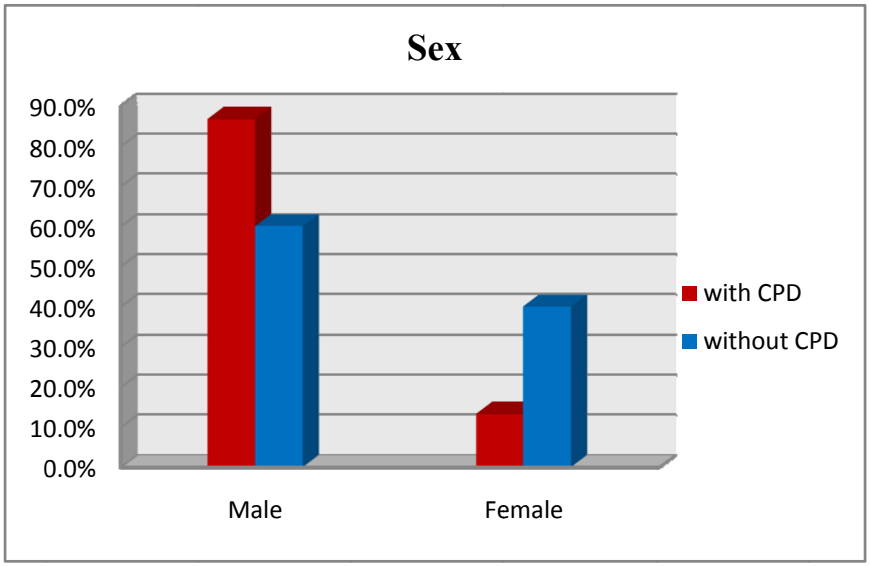


Figure-7 shows psychiatric morbidity was more common in males (86.7%) when compared to females (13.3%). This is statistically significant ($p < 0.05$).

Figure-8

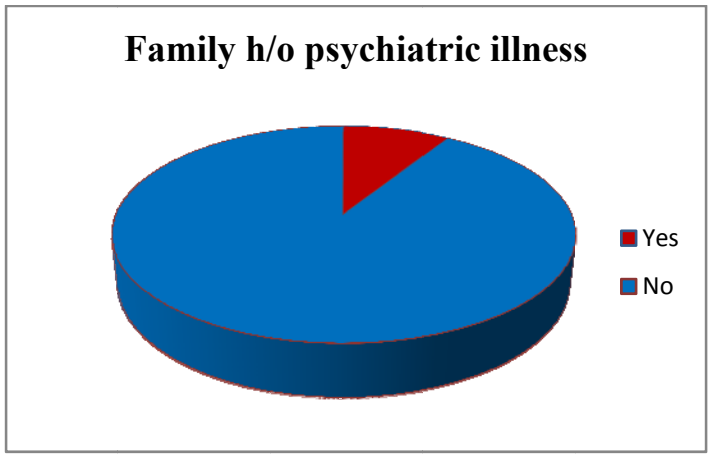


Figure-8 shows 8.9% of the patients had family history of psychiatric illness.

Among patients with family history, males represent 75%.

Figure-9

Figure showing comparison of family history of psychiatric illness and psychiatric morbidity among patients with Psoriasis

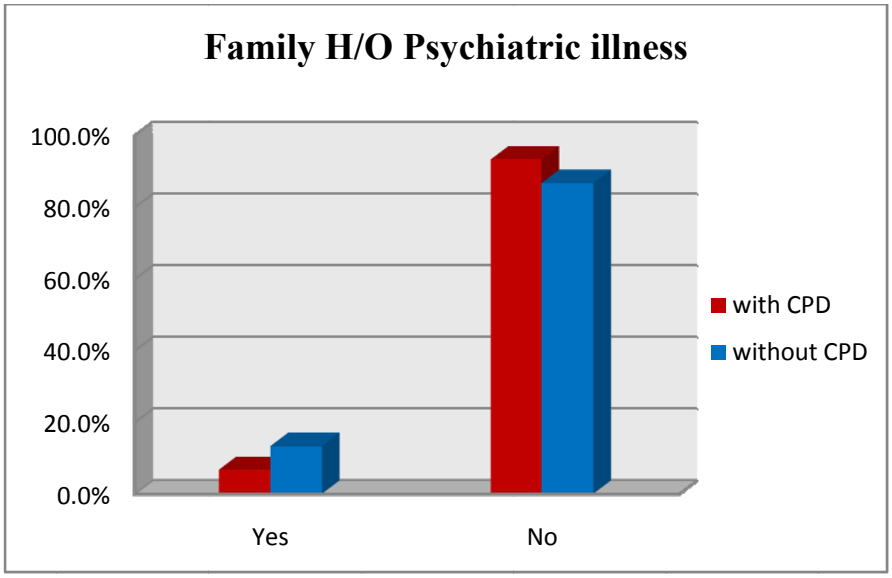


Table-4

Table showing comparison of family history of psychiatric illness and psychiatric morbidity among patients with Psoriasis

Family history of psychiatric illness	Patients with CPD		Patients without CPD		Results
	n	%	n	%	
Yes	2	6.7	2	13.3	df = 1 $x^2 = 0.549$ p = 0.459 p > 0.05 NS
No	28	93.3	13	86.7	

Table-4 results show no statistical significance between family history of psychiatric illness and psychiatric morbidity among patients with psoriasis.

Table-5

Table showing comparison of age of onset of Psoriasis and psychiatric morbidity among patients with Psoriasis

Age of onset of psoriasis (years)	Patients with CPD		Patients without CPD		Results
	n	%	n	%	
Below 31 yrs	7	23.3	1	6.7	df = 2 $x^2 = 4.622$ p = 0.099 p > 0.05 NS
32-51 yrs	14	46.7	12	80.0	
52 & above	9	30.0	2	13.3	

Age of onset of Psoriasis ranged from 28 to 68 years with mean age of 42.87years. Table-5 results show no statistical significance made out between the age of onset of Psoriasis and psychiatric morbidity among patients with Psoriasis. In this study patients with age of onset of Psoriasis from 32 to 51 years had higher psychiatric morbidity (46.7%).

Table-6

Table showing comparison of duration of Psoriasis and psychiatric morbidity among patients with Psoriasis

Duration of Psoriasis (years)	Patients with CPD		Patients without CPD		Results
	n	%	n	%	
Below 3 yrs	4	13.3	4	26.7	df = 2 x^2= 3.617 p = 0.164 p > 0.05 NS
4-10 yrs	17	56.7	10	66.7	
11 & above	9	30.0	1	6.7	

The duration of illness ranged from 1 to 30 years with mean duration of 7.56 years.Table-6 results show no statistical significance found between duration of Psoriasis and psychiatric morbidity among patients with Psoriasis. In this study, patients with duration of Psoriasis for 4 to 10 years had higher psychiatric morbidity (56.7%).

Table-7

Table showing comparison of pruritus was aggravated by stress and HAM-D among patients with Psoriasis

Pruritus-aggravated by stress	Normal		Depressed		Results
	n	%	n	%	
Yes	20	83.3	14	87.5	df = 1 x^2= 0.131 p = 0.718 p > 0.05 NS
No	4	16.7	2	12.5	

Table-7 results show no statistical significance made out between patients who reported that stress increased their pruritus and HAM-D (Hamilton Depression Rating Scale) scores among patients with Psoriasis.

Table-8

Table showing comparison of socio demographic variable and total number of stressful life events in the past 1 year among patients with Psoriasis [N=37]

Socio Demographic Variables		Total number of life events < 2		Total number of life events ≥ 2		Results
		n	%	n	%	
Age in years	18 – 44 45 – 64 Above 65	11 13 5	37.9 44.8 17.2	1 7 0	12.5 87.5 0	df = 2 x^2 = 4.742 p = 0.093 p > 0.05 NS
Sex	Male Female	22 7	75.9 24.1	6 2	75.0 25.0	df = 1 x^2 = 0.003 p = 0.960 p > 0.05 NS
Religion	Hindu Muslim	28 1	96.6 3.4	8 0	100.0 0	df = 1 x^2 = 0.284 p = 0.594 p > 0.05 NS
Socio Economic Status	Lower middle Upper lower	11 18	37.9 62.1	1 7	12.5 87.5	df = 1 x^2 = 1.851 p = 0.174 p > 0.05 NS
Marital Status	Married Separated	28 1	96.6 3.4	8 0	100.0 0	df = 1 x^2 = 0.284 p = 0.594 p > 0.05 NS
Marital life	Cordial Satisfactory Unsatisfactory Strained	6 18 3 2	20.7 62.1 10.3 6.9	3 4 1 0	37.5 50.0 12.5 0	df = 3 x^2 = 1.461 p = 0.691 p > 0.05 NS
Type of family	Nuclear Joint Broken	21 5 3	72.4 17.2 10.3	8 0 0	100.0 0 0	df = 2 x^2 = 2.816 p = 0.245 p > 0.05 NS

In this study, total of 37 patients (82.2%) had stressful life events and there is no statistical significance found between Socio demographic variable and total number of stressful life events in the past 1 year among patients with Psoriasis. (Table-8)

In the total sample, the number of stressful life events during their life time ranges from 2 to 10 with the Mean of 5.15 with SD of 1.74. In the past one year, it ranges from 0 to 4 with the Mean of 1.66 with SD of 1.06.

In the same way, cumulative life events score during their life time ranges from 100 to 449 with the Mean stress score of 244.04, SD of 84.76. In the past one year, it ranges from 0 to 191 with the Mean of 87.55, SD of 54.19.

In this study, patients in the age group 45 to 64 years had higher risk to 2 or more number of stressful life events compared to other groups. Male patients had higher risk to stressful life events compared to females. Patients belonging to upper lower Socio Economic Status and nuclear families were at more risk of exposure to high number of life events than others.

Figure-10

Figure showing comparison of total number of stressful life events in past 1 year and psychiatric morbidity among patients with Psoriasis

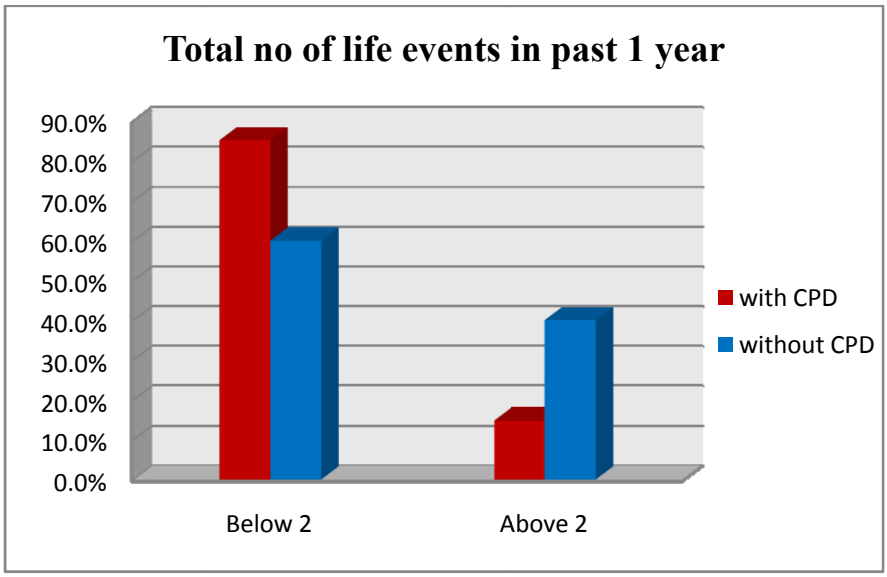


Table-9

Table showing comparison of total number of stressful life events in past one year and psychiatric morbidity among patients with Psoriasis

Total no of stressful life events in the past one year	Patients with CPD		Patients without CPD		Results
	n	%	n	%	
Below 2	23	85.2	6	60.0	df = 1 x^2= 2.731 p = 0.098 p > 0.05 NS
2 & above	4	14.8	4	40.0	

Table-9 results show no statistical significance between total number of stressful life events in past one year and psychiatric morbidity among patients with Psoriasis.

Table-10

Table showing comparison of socio demographic variables and cumulative life event score in past one year among patients with Psoriasis (N=37)

Socio Demographic Variables		Cumulative life event score						Results
		Below 68		69 - 140		141 & above		
		n	%	n	%	n	%	
Age in years	18 – 44 45 – 64 Above 65	4 4 1	44.4 44.4 11.1	5 10 4	26.3 52.6 21.1	3 6 0	33.3 66.7 0	df = 4 x^2 = 3.101 p = 0.541 p > 0.05 NS
Sex	Male Female	5 4	55.6 44.4	17 2	89.5 10.5	6 3	66.7 33.3	df = 2 x^2 = 4.341 p = 0.114 p > 0.05 NS
Religion	Hindu Muslim	8 1	88.9 11.1	19 0	100.0 0	9 0	100.0 0	df = 2 x^2 = 3.198 p = 0.202 p > 0.05 NS
Socio Economic Status	Lower middle Upper lower	2 7	22.2 77.8	9 10	47.4 52.6	1 8	11.1 88.9	df = 2 x^2 = 4.229 p = 0.121 p > 0.05 NS
Marital Status	Married Separated	8 1	88.9 11.1	19 0	100.0 0	9 0	100.0 0	df = 2 x^2 = 3.198 p = 0.202 p > 0.05 NS
Marital life	Cordial Satisfactory Unsatisfactory Strained	1 6 0 2	11.1 66.7 0 22.2	5 12 2 0	26.3 63.2 10.5 0	3 4 2 0	33.3 44.4 22.2 0	df = 6 x^2 = 9.722 p = 0.137 p > 0.05 NS
Type of family	Nuclear Joint Broken	5 2 2	55.6 22.2 22.2	16 3 0	84.2 15.8 0	8 0 1	88.9 0 11.1	df = 4 x^2 = 6.453 p = 0.168 p > 0.05 NS

Table-10 results show no statistical significance between socio demographic variables and cumulative life event score in past one year among patients with Psoriasis. In this study, patients in the age group of 45 to 64 had cumulative life events score of 69 and above. There is more number of males (23) had higher cumulative scores (> 69) compared to females (5). Patients belonging to upper lower Socio economic status and living in nuclear family were at higher cumulative life events score (> 69) compared to others.

Figure-11

Figure showing comparison of cumulative life events score in the past one year and psychiatric morbidity among patients with Psoriasis

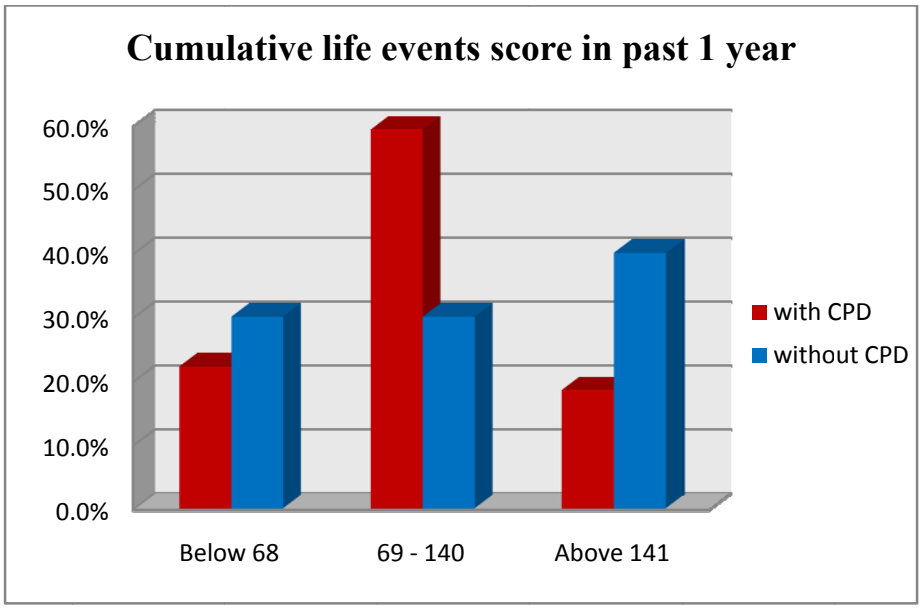


Table-11

Table showing comparison of cumulative life events score in the past one year and psychiatric morbidity among patients with Psoriasis

Cumulative life events score in past one year	Patients with CPD		Patients without CPD		Results
	n	%	n	%	
Below 68	6	22.2	3	30.0	df = 2 x^2 = 2.782 p = 0.249 p > 0.05 NS
69-140	16	59.3	3	30.0	
141 & above	5	18.5	4	40.0	

Table-11 results show no statistical significance between cumulative life events score in the past one year and Psoriatic patients with or without psychiatric morbidity.

Table-12

Table showing comparison of total no of life events in past one year and psychiatric morbidity

Total no of life events in past 1 year	Patients with CPD		Patients without CPD		Results
	n	%	n	%	
Below 2	23	85.2	6	60.0	df = 1 x^2 = 2.731 p = 0.098 p > 0.05 NS
2 & Above	4	14.8	4	40.0	

Table-12 results show no statistical significance between total number of life events in the past one year and Psoriatic patients with or without psychiatric morbidity.

Table-13

Table showing correlation of mean stressful life events score in past one year and psychiatric morbidity among patients with Psoriasis

Variable	Patients with CPD (n=30)	Patients without CPD (n=15)	Result
Mean no of stressful life events in past one year	1.73±0.828	1.53±1.457	t=0.589 df=43 p=0.559 p>0.05 NS
Mean cumulative life event score in past one year	91.67±44.643	79.33±70.661	t=0.716 df=43 P=0.478 p>0.05 NS

Table-13 results show no statistical significance between Mean number of stressful life events or cumulative score among Psoriatic patients with or without psychiatric morbidity.

DISCUSSION

The aim of the study is to know the prevalence of psychiatric morbidity and stressful life events among patients with psoriasis; to correlate them with socio demographic variables and to know their clinical relevance. The study was done in the native population who were attending dermatology department at Government Raja Mirasudhar hospital, Thanjavur. A homogenous population was chosen on the basis of inclusion criteria. Forty five patients seen consecutively were chosen.

This study (Table-1) showed male preponderance over females (males 77.8% Vs females 22.2% a male female ratio of 3.5:1) which is almost similar to the finding of Kaur, 1997 (67% males, M:F ratio of 2.03:1), Okhandiar, 1963 (M:F ratio of 2.46:1), Bedi T R, 1977 (M:F ratio of 2.5:1). This study does not have concurrence regarding sex distribution with Manolache L, 2010 (females 66%).

In this study, the age of the patients ranged from 29-67 years with the mean age of 50 years and the median age of 50 years. This is similar to findings observed by Manolache L, 2010 (Median age 50 years). Age and Mean age in our study is not similar to the study done by Cemal Bilac, 2009. In his study, age ranges from 16 to 81and the mean age was 39.5±15.

Henseler and Christopher, on the basis of phenotype database of 2147 patients recognized two distinct patient cohorts. One cohort had early onset (Type I) of Psoriasis in the second decade and other cohort had late onset (Type II) of the disease in the fifth decade.

In this study, highest incidence is noted in the age group of 45-64 years. This is contrary to the study done by Okhandiar, 1963 (the highest incidence is in the age group of 20-30 years).

In this study, the mean age of onset of psoriasis in males and females is found to be 44.7 and 36.4 years respectively. These results are similar to the studies done by Bedi, 1977. In his study, he observed that females had lower mean age of onset compared to males. These findings are not in agreement with Kaur, 1997. He found that women had slightly lower mean age of onset (27.6 years) compared to men (30.9 years).

In this study, the duration of illness ranged from 1-30 years with mean duration of 7.55 years. This finding is not in agreement with the study done by Cemal Bilac, 2009, who observed the duration of disease ranged between 1 month and 40 months with the mean of 12.4±9.9 months.

There are only few studies which have made record of family history of psoriasis in their patients.

Indian studies report lower familial incidence of the disease. In this study, about 7 patients (15.6%) gave a family history of psoriasis. This is comparable to the study done by Manolache L, 2010 (10.65%), Bedi TR, 1995 (14%). Our finding is not in agreement with the findings in the study of Farber et al 1974 (36%), Kaur et al 1997 (2%).

Pruritus is the most frequent symptom in patients with Psoriasis (96.6%). Prevalence of pruritus in Psoriasis, ranging from 63 to 84%, has been reported from different parts of the world. Despite a high prevalence of pruritus in psoriasis, limited information is available on this subject.

In our study, about 40 (88.9%) out of total 45 patients gave history of pruritus. This is consistent with the studies of Okhandiar et al 1963 (95%), Bedi TR 1977 (81%). Our finding is slightly higher than the study done by Kaur et al 1997 (65%). So, the results of various studies suggest that psoriasis is definitely pruriginous disorder adding to the morbidity of this dermatosis.

Psychiatric morbidity is said to be high in patients with Psoriasis. In our study, the psychiatric morbidity is 66.7% (30 out of the total 45 patients). Our findings are slightly higher than that observed in the studies of Neelu Sharma, 2003 (53.3%). Our findings are contrary to the findings by Mattoo et al 2001 (24.7%), Pulimood S, 1996 (11%).

The most common psychiatric diagnoses in Psoriasis are adjustment disorder and depression. In our study, among psychiatric morbidity, depressive disorder constitutes 24.4%, alcohol harmful use 28.9%, alcohol dependence 4.4% and depression with comorbid substance abuse 8.9%. This is in agreement with the findings in the study of Mattoo, 2001. In his study, he found that Depressive episode constitutes 29%, Dysthymia 4% and Adjustment disorder 62%. Our findings are slightly higher than that seen in the study done by Neelu Sharma, 2003, who observed 23.3% of Psoriatic patients had Depression, 3.3% Anxiety.

Gupta et al in 1998 has explored the relationship of depression to pruritus and concluded that degree of depression increased with severity of pruritus. In our study, there is no difference between depressed and non depressed subjects in perceiving the stress with regard to aggravation of pruritus.

Psychological factors precipitate, and contribute to, the morbidity of many psychosomatic disorders. Psychoneuroimmunologists have noted that stressful life events are important psychosocial factors which can affect the nervous, endocrine, and immune systems (Farber, 1991).

The total number of life events and its score for the preceding one year have been analyzed (Table-8 & 10)). It has been found that 21.6% of patients

had more than two stressful life events during preceding one year, which is considered as significant (Gurmeet Singh, 1984). In our study, 75.7% of patients had cumulative life events score more than 69, which is significant. An attempt has been made to find the correlation if any between life events and psychiatric morbidity. Logically, it seems that the person with more life events will have more risk of psychiatric illness and exacerbation of psoriasis. But our study showed no statistical significance between number of life events, scoring and psychiatric morbidity. (Table-9 & 11)

In this study, there is no significance made out between cumulative life event score in the past one year and psychiatric morbidity among patients with Psoriasis. This finding is contrary to Fava GA, 1980. He reported that the patients with Psoriasis and chronic urticaria were exposed to stressful life situations before the onset of disease and suffered from psychological distress (anxiety, depression, inadequacy) significantly more than those with fungal infections.

Stressful life events may affect the onset or exacerbation of some skin diseases. Estimates of proportion of Psoriasis patients whose disease is affected by stressful events vary from 40% to 80% (Gupta MA, 1989) depending on how stress is defined (acute or chronic) and measured (by self reports or responses on standardized checklists).

In this study, 82.2% of patients (37 out of 45 Psoriatic patients) experienced stressful life events within 1 year preceding the exacerbation of disease. This is similar to studies done by Polenghi et al, 1987 (79% of the Psoriatic patients experienced stressful life events within one year preceding the onset of illness).

In this study, 71.1% of psoriatic patients experienced at least 1 stressful life event within 6 months preceding the onset and exacerbation of disease. This is similar to the study, done by Baldero, 1989, who found that 90% of patients with Psoriasis reported at least one event within 6 months preceding the onset of illness.

Polenghi et al, 1989, found that 72% of men and 71% of women with Psoriasis reported stressful life events during the year preceding the onset of their illness (Psoriasis). In our study, it is found that 80% (28 out of 35) of men and 90% (9 out of 10) of women with Psoriasis reported stressful life events during the year preceding the exacerbation of Psoriasis.

In this study, in decreasing order of frequency, the most common stressful life events observed are financial loss or problems, unemployment of self or family member, death of close family member, illness of the family member, family conflict, change in residence, marital conflict, excessive alcohol or drug use by the family member, major personal illness or injury,

change in sleeping habits and miscellaneous. This is similar to the observation made by S K Malhotra 2008, who found that in psoriasis vulgaris group, the most common stressful life event seen was financial loss or problems, followed by death of close family member, sexual problems, family conflict, major personal illness or injury, transfer or change in working conditions, failure in examinations, family member unemployed, illness of family member, getting married or engaged and miscellaneous compared to chronic urticaria group.

In summary, this study has found 66.7% of patients suffered from psychiatric illness. Middle age, male sex, married status, lower socio economic status, nuclear family have been important risk factor for psoriasis and psychiatric morbidity. Mood disorders (depression) and alcohol harmful use/dependence are found to be the common psychiatric diagnoses. Number of life events and score in the past one year do not differ significantly in psoriatic patients with or without psychiatric morbidity.

CONCLUSION

- Psoriasis is more common in males than females.
- Psoriasis is more common in middle age and married than unmarried individuals.
- Most of the patients with psoriasis belong to lower socio economic status.
- Psychiatric morbidity is common in patients with Psoriasis.
- Middle age, male sex, married status, lower socio economic status and nuclear family have been important risk factors for psychiatric morbidity in psoriasis.
- The duration of psoriasis does not have any correlation with psychiatric morbidity.
- Depression is found to be the common psychiatric diagnosis in Psoriasis.
- Substance use disorders are prevalent in Psoriasis patients.
- Number of life events and score in the past one year do not differ significantly in psoriatic patients with or without psychiatric morbidity.
- Stressful life events are more in patients with psoriasis, especially events occurring within a year.
- Overall, these results support the view that psychological stress plays a role in triggering or exacerbating psoriasis.

LIMITATIONS OF THE STUDY

1. The major limitation of the study is the small sample size.
2. The other limitation is the fact that this is a cross sectional analysis.
3. Data regarding life events were collected after the incident. Distortion of life events due to time and recall bias is possible.
4. Presumptive Stressful Life Events Scale picks up only certain life events. Everyday "Hassles" which may cause a significant life event, may not be scored in the life event scale.
5. Follow up of the patients would help understanding the illness, its course and outcome. But, it could not be done because many of the patients did not turn up even though they were adequately informed for follow up.

PRACTICAL IMPLICATIONS

1. The prevalence of psychiatric comorbidity and emerging evidence for stress-induced exacerbations of psoriasis has led to the development of psychosocial intervention as an important adjunctive therapy in the management of psoriasis.
2. The psychotherapeutic modalities with evidence for significant clinical improvement include Hypnosis, Meditation, Cognitive-Behavioral Therapy and Guided Imagery Training.
3. Psychological interventions can help individuals to reinterpret events and develop strategies to cope with stressful events, thus decreasing morbidity due to these diseases.
4. There are only limited data on controlled trails of psychopharmacological treatments of anxiety and depression in psoriasis patients and its effect on the course of psoriasis.
5. In psoriasis the severity of pruritus is associated with higher depression scores and a greater risk for suicide. An improvement in pruritus led to a decrease in depression scores.

S.No	Age	Sex	Religion	Education	Occupation	FI	SES	Marital Status
1	4	1	1	5	3	5	3	2
2	4	1	1	7	6	5	4	2
3	2	2	1	6	6	4	4	4
4	4	1	1	6	6	6	4	2
5	2	1	1	6	5	5	4	2
6	4	1	1	6	5	6	4	2
7	3	1	1	6	5	5	4	2
8	3	1	1	5	3	5	3	2
9	2	1	1	6	3	5	4	2
10	4	1	1	6	3	5	4	2
11	3	1	1	6	3	5	4	2
12	4	1	1	6	3	5	4	2
13	2	1	1	4	4	3	3	2
14	2	1	1	4	4	4	3	2
15	2	1	1	5	3	4	3	2
16	3	1	1	5	3	5	3	2
17	2	1	1	3	4	3	3	2
18	3	1	1	5	3	3	3	2
19	3	1	1	5	3	3	3	2
20	3	1	1	5	5	4	4	2
21	3	1	1	6	6	4	4	2
22	2	1	1	5	6	4	4	2
23	3	1	1	6	3	5	4	2
24	2	2	1	5	5	4	4	2
25	3	1	1	6	4	3	3	2
26	2	2	1	6	6	5	4	2
27	3	1	1	5	3	4	3	2
28	3	2	1	5	6	5	4	2
29	2	1	1	4	4	3	3	2
30	3	1	1	7	6	3	4	2
31	3	2	1	5	3	4	3	2

32	2	2	1	6	5	4	4	2
33	3	1	1	6	3	4	3	2
34	2	1	1	4	3	4	3	2
35	2	1	2	6	5	5	4	2
36	3	1	1	5	3	5	3	2
37	3	2	1	6	6	5	4	2
38	2	1	1	6	5	4	4	2
39	3	1	1	5	3	3	3	2
40	2	2	1	3	4	3	3	2
41	3	2	1	5	5	4	4	2
42	3	1	1	6	6	5	4	2
43	3	1	1	6	3	5	4	2
44	3	1	1	5	5	4	4	2
45	3	2	1	6	5	5	4	2

S.No = Serial number

Age = 1) <18 years 2) 18-44 years 3) 45-64 years 4) >65 years

Sex = 1) male 2) female

Religion = 1) Hindu 2) Muslim 3) Christian 4) Others

Education = 1) Professional or Honours 2) Graduate or Post graduate 3) Intermediate or post hi

Occupation = 1)Profession 2) Semi Profession 3) Clerical, shop owner, farmer 4) Skilled worke

FI = Family income per month = 1) 19575 2) 9788-19574 3) 7323-9787 4) 4894-7322 5) 2936-

SES = Socio-economic status = 1) Upper 2) Upper Middle 3) Lower Middle 4) Upper Lower 5)

Marital status = 1) single 2) married 3) widowed 4) separated 5) divorced

Marital life = 1) cordial 2) satisfactory 3) Unsatisfactory 4) strained

Type of family = 1) nuclear 2) joint 3) extended 4) broken

FH-MI = Family history of mental illness = 1) present 2) absent

FH-Pso = Family history of psoriasis = 1)present 2) absent

Age of onset in yrs = Age of onset of psoriasis in years

Duration in yrs = Duration of psoriasis in years

Pruritus = whether pruritus associated with psoriasis = 1) Yes 2) No

Pruritus 1 = If yes, does pruritis increases during stress? = 1) Yes, increases 2) No, Not increa

Any other SLE = Any other stressful life events within a year? = 1) Yes 2) No

HOS use = History of substance abuse = 1) present 2) absent

HOS - TOS = If present, type of substance = 1) Alcohol 2) Tobacco 3) Others 4) Multiple

HOS-when started = If present, when it has started = 1) Before the onset of illness 2) After the o

HOS-pattern = If present, pattern of use = 1) Occasional 2) Harmful use 3) Dependence

TOT = Type of treatment = 1) Topical steroids 2) PUVA 3) Methotrexate 4) Tazoretene 5) Othe

PSLES = Presumptive stressful life events scale (Gurmeet singh)

No of LE - lifetime = Total number of stressful Life Events during their lifetime

Lifetime - Score = Total score for stressful life events during their lifetime.

No of LE - previous 1 yr = Total number of stressful life events in the previous 1 year before the c

Score - previous 1 yr = Total score for stressful life events in the previous 1 year

HAM-D = Hamilton depression rating scale = 1) None/Minimal depression 2) Mild depression

CPD =Current psychiatric diagnosis (using ICD-10) = 1)Yes 2) No

CPD 1 = If yes = 1) Depressive disorder 2) Anxiety disorder 3) Alcohol dependence 4) Alcohol

PRESUMPTIVE STRESSFUL LIFE EVENTS SCALE (Gurmeet Sing

Rank	Life Events	Mean stress score
1	Death of spouse	95
2	Extra-marital relation of spouse	80
3	Marital separation/divorce	77
4	Suspension or dismissal from job	76
5	Detention in jail of self or close family member	72
6	Lack of child	67
7	Death of close family member	66
8	Marital conflict	64
9	Property or crops damaged	61
10	Death of friend	60
11	Robbery or theft	59
12	Excessive alcohol or drug use by family membe	58
13	Conflict with in laws(other than over dowry)	57

14	Broken engagements or love affairs	57
15	Major personal illness or injury	56
16	Son or daughter leaving home	55
17	Financial loss or problems	54
18	Illness of family member	52
19	Trouble at work with colleagues, superiors	52
20	Prophecy of astrologer or palmist etc	52
21	Pregnancy of wife	52
22	Conflict over dowry	51
23	Sexual problems	51
24	Self or family member unemployed	51
25	Lack of son	51
26	Large loan	51
27	Marriage of daughter or dependent sister	49
28	Minor violation of law	48
29	Family conflict	47
30	Break-up with friend	47
31	Major purchase or construction of house	46
32	Death of pet	44
33	Failure in examination	43
34	Appearing for an examination or interview	43
35	Getting married or engaged	43
36	Trouble with neighbor	40
37	Unfulfilled commitments	40
38	Change in residence	39
39	Change or expansion of business	37
40	Outstanding personal achievement	37
41	Begin or end schooling	36
42	Retirement	35
43	Change in working conditions/transfer	33
44	Change in sleeping habits	33
45	Birth of daughter	30
46	Gain of new family member	30

47	Reduction in number of family function	29
48	Change in social activities	28
49	Change in eating habits	27
50	Wife begins or stops work	25
51	Going on pleasure trip or pilgrimage	20

Marital Life	Type of Family	FH-MI	FH-Pso	Age of onset in yrs	Duration in yrs	Pruritus
2	1	2	2	60	5	1
1	1	2	2	63	2	1
4	4	2	2	32	5	1
2	1	2	2	68	2	1
2	1	2	2	36	4	1
2	1	2	2	60	7	1
2	1	2	2	45	25	2
1	1	1	2	30	30	1
2	1	2	2	37	7	1
2	2	2	2	64	1	1
2	1	1	2	44	11	1
2	1	2	1	65	1	1
1	1	2	1	28	14	1
3	1	2	2	28	1	1
2	1	2	2	38	2	1
2	1	2	2	53	7	2
2	1	1	2	32	1	1
2	1	2	2	40	10	1
1	1	2	1	56	3	1
1	1	2	2	47	10	1
2	1	2	2	45	10	1
1	1	2	2	37	7	1
2	1	2	2	45	15	1
4	4	2	2	32	10	2
2	1	2	2	40	5	2
3	1	2	2	35	3	1
4	4	2	2	39	11	1
2	2	2	2	30	15	1
1	1	2	1	30	13	1
2	2	2	2	55	5	1
1	1	2	2	48	5	1

2	4	2	2	30	5	1
1	1	2	1	45	15	1
2	1	2	2	29	3	1
2	1	2	2	37	7	1
2	1	2	2	51	7	2
2	1	2	2	46	2	1
2	2	2	2	36	4	1
1	1	2	1	54	3	1
1	1	1	2	32	3	1
3	1	2	2	49	7	1
2	1	2	2	40	5	1
2	2	2	2	52	7	1
1	1	2	2	36	10	1
3	1	2	1	30	15	1

gh school diploma 4) High school certificate 5) Middle school certificate 6) Primary school certificate 7

r 5) Semiskilled worker 6)Unskilled worker 7) Unemployed

4893 6) 980-2935 7) 979

Lower

ses

nset of illness

ers

onset or exacerbation of psoriasis

3) Moderate depression 4) severe depression

harmful use 5) Alcohol dependence and depressive disorder 6) Alcohol harmful use and depressive dis

h et al. 1984)

Pruritus 1	Any other SLE	HOS use	HOS - TOS	HOS-when started	HOS-pattern	TOT
1	2	1	1	1	3	1
1	2	2				3
1	2	2				3
1	2	2				1
2	2	1	1	1	2	1
1	2	1	1	1	2	1
	2	1	4	1	2	1
1	2	1	1	1	1	1
1	2	2				1
1	2	1	1	1	1	1
1	2	1	1	1	2	3
1	2	1	4	1	2	3
1	2	2				5
2	2	1	1	1	2	5
2	2	1	1	1	1	1
	2	2				5
1	2	1	1	1	1	5
1	2	1	4	1	2	5
1	2	1	1	1	2	3
1	2	1	1	1	2	5
2	2	2				3
1	2	2				3
1	2	1	1	1	2	3
	2	2				5
	2	1	4	1	3	1
1	2	2				3
1	2	1	4	1	2	1
1	2	2				5
1	2	1	1	1	2	3
1	2	2				3
1	2	2				1

1	2	2				3
1	2	1	1	1	2	1
1	2	1	1	1	2	5
1	2	1	2	1	2	1
	2	2				5
1	2	2				3
2	2	1	1	1	2	3
1	2	1	1	1	2	1
2	2	2				3
1	2	2				5
1	2	1	4	1	3	3
1	2	1	4	2	1	3
1	2	1	1	2	1	1
1	2	1	2	2	1	3

) illiterate

order 7) Others

		PSLES		HAM-D	CPD
No of LE - lifetime	Lifetime - Score	No of LE - previous 1 yr	Score - previous 1 yr		
8	359	2	95	3	1
5	260	2	99	3	1
6	311	1	39	4	1
3	111	0	0	2	2
6	247	2	99	1	1
6	266	2	72	1	1
10	449	2	99	1	1
3	100	0	0	2	1
4	191	4	191	1	2
7	372	2	106	2	1
5	228	3	163	1	1
4	154	1	66	2	1
6	259	2	105	1	1
2	122	2	122	2	1
3	140	0	0	1	2
5	206	2	105	1	2
4	216	2	110	1	2
6	297	1	54	2	1
4	182	2	103	1	1
5	233	3	161	2	1
5	202	2	105	2	1
3	146	0	0	1	2
4	180	1	58	1	1
6	259	1	54	2	1
5	253	2	101	1	1
6	354	2	144	1	2
9	448	0	0	1	1
3	148	1	55	1	2
7	317	2	90	2	1
5	227	2	96	4	1
4	186	1	52	1	2

6	332	2	149	3	1
7	354	2	153	1	1
3	169	0	0	1	1
5	219	1	66	1	2
3	140	0	0	1	2
7	311	3	134	1	2
3	178	1	66	1	1
4	195	3	137	1	1
4	209	0	0	1	2
8	349	3	151	1	2
6	312	3	143	1	1
6	246	2	100	4	1
6	287	4	182	1	2
5	258	2	115	3	1

CPD 1

5

1

1

4

4

4

1

1

4

6

1

4

4

4

6

1

4

1

3

4

6

1

1

4

4

4

4

3

1

1

Appendix-I

PROFORMA

Name:

Address:

Age: 1) <18years 2) 18-44years 3) 45-64years 4) >65years

Sex: 1) male 2) female

Religion: 1) Hindu 2) Muslim 3) Christian 4) others

Education: 1) professional or Honours 2) graduate or post graduate 3)Intermediate or post high school diploma 4) High school certificate 5)Middle school certificate 6) Primary school certificate 7) Illiterate

Occupation: 1) profession 2) Semi profession 3) Clerical, shop owner, farmer 4) Skilled worker 5) Semiskilled worker 6) Unskilled worker 7) Unemployed

Family income per month: 1) 19575 2)9788-19574 3) 7323-9787 4) 4894-7322 5) 2936-4893 6) 980-2935 7) 979

Socio-economic status: 1) Upper 2) Upper Middle 3) Lower Middle 4) Upper Lower 5) Lower

Marital status: 1) single 2) married 3) widowed 4) Separated 5) divorced

Marital life: 1) cordial 2) satisfactory 3) Unsatisfactory 4) strained

Type of family: 1) nuclear 2) joint 3) extended 4) broken

Family history of mental illness: 1) present 2) absent

Family history of psoriasis: 1) present 2) absent

Age of onset of psoriasis in years:

Duration of psoriasis in years:

Whether Pruritus associated with psoriasis: 1) Yes 2) No

If yes, is pruritus aggravated by stress

1) Yes 2) No

Any other stressful life events within a year? 1) Yes 2) No

History of substance abuse: 1) present 2) absent

(a) If present, type of substance

1) Alcohol 2) Tobacco 3) Others 4) Multiple

(b) If present, when it has started

1) Before the onset of illness 2) After the onset of illness.

(c) If present, pattern of use

1) Occasional 2) Harmful use 3) Dependence

Type of treatment: 1) topical steroids 2) PUVA 3) Methotrexate 4) Tazoretene 5) Others

Presumptive Stressful Life Events Scale – PSLES (Gurmeet singh):

1. Total number of stressful Life Events during their lifetime:
2. Total score for stressful life events during their lifetime:
3. Total number of stressful life events in the previous 1 year before the onset or exacerbation of psoriasis:
4. Total score for stressful life events in the previous 1 year

Hamilton Depression Rating Scale (HAM-D):

1) None/Minimal depression 2) Mild depression

3) Moderate depression 4) Severe depression

Current psychiatric diagnosis (using ICD-10 diagnostic criteria)

1) Yes 2) No

If yes, (CPD 1)

1) Depressive disorder 2) Anxiety disorder 3) Alcohol dependence 4) Alcohol harmful use 5) Alcohol dependence and depressive disorder 6) Alcohol harmful use and depressive disorder 7) Others

APPENDIX-II

HAMILTON DEPRESSION RATING SCALE (17 ITEMS SCALE)

1. Depressed Mood (sadness, hopeless, helpless, worthless)

0 = Absent

1 = These feeling states indicated only on questioning

2 = These feeling states spontaneously reported verbally

3 = Communicates feeling states nonverbally (i.e., through facial expression, posture, voice, and tendency to weep)

4 = Patient reports virtually only these feeling states in his spontaneous verbal and nonverbal communication

2. Feelings of Guilt

0 = Absent

1 = Self-reproach, feels he has let people down

2 = Ideas of guilt or rumination over past errors or sinful deeds

3 = Present illness is a punishment. Delusions of guilt

4 = Hears accusatory or denunciatory voices and/or experiences threatening visual hallucinations

3. Suicide

0 = Absent

1 = Feels life is not worth living

2 = Wishes he were dead or any thoughts of possible death to self

3 = Suicide ideas or gesture

4 = Attempts at suicide (any serious attempt rates 4)

4. Insomnia Early

0 = No difficulty falling asleep

1 = Complains of occasional difficulty falling asleep (e.g., more than 1/2 hour)

2 = Complains of nightly difficulty falling asleep

5. Insomnia Middle

0 = No difficulty

1 = Patient complains of being restless and disturbed during the night

2 = Waking during the night – any getting out of bed rates 2 (except for purposes of voiding)

6. Insomnia Late

0 = No difficulty

1 = Waking in early hours of the morning but goes back to sleep

2 = Unable to fall asleep again if he gets out of bed

7. Work and Activities

0 = No difficulty

1 = Thoughts and feelings of incapacity, fatigue, or weakness related to activities, work, or hobbies

2 = Loss of interest in activity; hobbies or work – either directly reported by patient, or indirect in listlessness, indecision and vacillation (feels he has to push self to work or activities)

3 = Decrease in actual time spent in activities or decrease in productivity. In hospital, rate 3 if patient does not spend at least 3 hours a day in activities (hospital job or hobbies) exclusive of ward chores

4 = Stopped working because of present illness. In hospital, rate 4 if patient engages in no activities except ward chores, or if patient fails to perform ward chores unassisted

8. Retardation (slowness of thought and speech: impaired ability to concentrate, decreased motor activity)

0 = Normal speech and thought

1 = Slight retardation at interview

2 = Obvious retardation at interview

3 = Interview difficult

4 = Complete stupor

9. Agitation

0 = None

1 = Fidgetiness

2 = Playing with hands, hair, etc

3 = Moving about, can’t sit still

4 = Hand wringing, nail biting, hair-pulling, biting of lips

10. Anxiety Psychic

0 = No difficulty

1 = Subjective tension and irritability

2 = Worrying about minor matters

3 = Apprehensive attitude apparent in face or speech

4 = Fears expressed without questioning

11. Anxiety Somatic

0 = Absent

1 = Mild

2 = Moderate

3 = Severe

4 = Incapacitating

12. Somatic Symptoms – Gastro-intestinal

0 = None

1 = Loss of appetite but eating without staff encouragement. Heavy feelings in abdomen

2 = Difficulty eating without staff urging. Requests or requires laxatives or medication for bowels or medication for GI symptoms

13. Somatic Symptoms General

0 = None

1 = Heaviness in limbs, back, or head. Backaches, headaches, muscle aches. Loss of energy and fatigability

2 = any clear-cut symptoms rates 2

14. Genital Symptoms

Symptoms such as: Loss of libido, menstrual disturbances

0 = Absent

1 = Mild

2 = Severe

15. Hypochondriasis

0 = Not present

1 = Self-absorption (bodily)

2 = Preoccupation with health

3 = Frequent complaints, requests for help, etc

4 = Hypochondriacal delusions

16. Loss of Weight

0 = No weight loss

1 = Probable weight loss associated with present illness

2 = Definite (according to patient) weight loss

17. Insight

0 = Acknowledges being depressed and ill

1 = Acknowledges illness but attributes cause to bad food, climate, overwork, virus, need for rest, etc

2 = Denies being ill at all

APPENDIX-III

PRESUMPTIVE STRESSFUL LIFE EVENTS SCALE

(Gurmeet Singh et al. 1984)

Rank	Life Event	One year	Life Time
01	Death of spouse (95)		
02	Extra-marital relation of spouse (80)		
03	Marital separation/divorce (77)		
04	Suspension or dismissal from job (76)		
05	Detention in jail of self or close family member (72)		
06	Lack of child (67)		
07	Death of close family member (66)		
08	Marital conflict (64)		
09	Property or crops damaged (61)		
10	Death of a friend (60)		
11	Robbery or theft (59)		
12	Excessive alcohol or drug use by family member (58)		
13	Conflict with in laws (other than over dowry) (57)		
14	Broken engagements or love affairs (57)		
15	Major personal illness or injury (56)		
16	Son or daughter leaving home (55)		
17	Financial loss or problems (54)		
18	Illness of family member (52)		
19	Trouble at work with colleagues, superiors (52)		
20	Prophecy of astrologer or palmist etc (52)		
21	Pregnancy of wife (52)		
22	Conflict over dowry (51)		
23	Sexual problems (51)		
24	Self or family member unemployed (51)		
25	Lack of son (51)		
26	Large loan (51)		
27	Marriage of daughter or dependent sister (49)		

28	Minor violation of law (48)		
29	Family conflict (47)		
30	Break-up with friend (47)		
31	Major purchase or construction of house (46)		
32	Death of pet (44)		
33	Failure in examination (43)		
34	Appearing for an examination or interview (43)		
35	Getting married or engaged (43)		
36	Trouble with neighbor (40)		
37	Unfulfilled commitments (40)		
38	Change in residence (39)		
39	Change or expansion of business (37)		
40	Outstanding personal achievement (37)		
41	Begin or end schooling (36)		
42	Retirement (35)		
43	Change in working conditions/transfer (33)		
44	Change in sleeping habits (33)		
45	Birth of daughter (30)		
46	Gain of new family member (30)		
47	Reduction in number of family function (29)		
48	Change in social activities (28)		
49	Change in eating habits (27)		
50	Wife begins or stops work (25)		
51	Going on pleasure trip or pilgrimage (20)		

Total number of life events (one year):

Life events score (one year):

Total number of life events (life time):

Life events score (life time)

APPENDIX-IV

MODIFIED KUPPUSWAMY SCALE FOR SOCIO ECONOMIC

STATUS (updated by N.Kumar, C.Shekhar, 2007)

Education	**Educational Level**		**Score**
	Professional / Honours		7
	Graduate/Postgraduate		6
	Intermediate / Post High school diploma		5
	High School		4
	Middle School		3
	Primary school / Literate		2
	Illiterate		1
Occupation	**Type of occupation**		
	Profession		10
	Semi profession		6
	Clerical, Shop owner, Farmer		5
	Skilled worker		4
	Semi-skilled worker		3
	Unskilled worker		2
	Unemployed		1
Income	**Family income per month**		
	Year-1976	**Year-2005**	
	>2000	>17520	12
	1000-1999	8760-17515	10
	750-749	6570-8750	6
	500-749	4380-6560	4
	300-499	2628-4370	3
	101-299	885-2620	2
	<100	<876	1

Total Score:

Score		Socio Economic Class
26-29	Upper	Upper I
16-25	Middle	Upper middle II
11-15		Lower middle III
5-10	Lower	Upper lower IV
<5		Lower V

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