CHAPTER II

REVIEW OF LITERATURE

REVIEW OF LITERATURE

The literature pertaining to the study, 'Management of Stress and Depression and Enhancement of Well-being in Kidney Patients through Positive Therapy' has been reviewed and presented under the following categories:

KIDNEY FAILURE

- Incidence
- Causes
- Symptoms
- Effects
- Management

STRESS

- Stress and Kidney Failure
- Stress Management

DEPRESSION

- Depression and Kidney Failure
- Effects
- Management

WELL-BEING/QUALITY OF LIFE

POSITIVE THERAPY AND STRESS

POSITIVE THERAPY AND DEPRESSION

KIDNEY FAILURE

INCIDENCE

Davison (2007) observed from his extensive research that chronic kidney disease (CKD) affects more than 19 million people in the United State and prevalence of CKD is expected to double within 10 years. Additionally, a significant number of predominantly elderly patients have end stage renal disease, necessitating dialysis or kidney transplant.

Dash and Agarwal (2006) report that chronic kidney disease (CKD) is a global threat to health, in general and for developing countries, in particular, because therapy is expensive and life-long. In India, 90% of the patients cannot afford the cost. Over 1 million people worldwide are alive on dialysis or with a functioning graft. Incidence of CKD has doubled in the last 15 years. Dash and Agarwal (2006) conducted two studies: A population screening in New Delhi and a prospective study that involved 48 hospitals. In the population screening, 4712 subjects participated in a blood biochemistry test. Mean age was 42.38±12.54 years; 56% were male; 37 were found to have chronic renal failure (CRF) (prevalence rate of 0.78%). If these data are applied to India's 1 billion population, there are 7.85 million CRF patients in India.

Johnson and Usherwood (2006) reported of a recent population study that demonstrated one in every 6 Australian adults as having CKD. Modi and Jha (2005) estimated end stage renal disease (ESRD) incidence for four consecutive calendar years (2002–2005) among 572 029 subjects residing in 36 of the 56 wards of the city of Bhopal. These subjects were beneficiaries of free health care in a hospital established after the 1984 Union Carbide Industrial Accident. A total of 346 new ESRD patients were diagnosed during the study period; 86 in 2002, 82 in 2003, 85 in

2004 and 93 in 2005. The mean age was 47 years and 58% were male. Diabetic nephropathy was the most. The study provided the first population-based ESRD incidence data from India.

Researchers at the Center for Biomedical Engineering report that as of 2001, over 1.1 million patients were on dialysis treatment throughout the world. They expect the number to climb to over two million by 2010. In the U. S., the total annual cost per patient is about $66,000. The world-wide cost of treating ESRD will surpass $1 trillion for the first decade of the 21st century.

CAUSES OF KIDNEY FAILURE

DIABETES

According to studies by Dash and Agarwal (2006), etiologically, diabetes (41%), hypertension (22%), chronic glomerular nephritis (16%), chronic interstitial disease (5.4%), ischaemic nephropathy (5.4%), obstructive uropathy (2.7%), miscellaneous (2.7%) and unknown cause (5.4%) constituted the spectrum.

In another study done by Dash and Agarwal (2006) from 48 centres distributed all over India, data were obtained based on prospective investigations conducted over a period of 1 (33 hospitals) to 3 months (15 hospitals) comprising 4145 CKD patients. It showed the following etiological pattern: diabetes (29.7%), chronic glomerulonephritis (19.3%), hypertension (14%), chronic interstitial disease and vesico-ureteral reflux (12.6%), obstruction and calculus (9.3%), ADPKD and Alport Syndrome (8.4%), undiagnosed (6.2%).

If we combine the two studies of Dash and Agarwal (2006), diabetes emerged as the most frequent cause (30–40%) followed by hypertension (14–22%),

CGN (16–20%), CIN (5.4–12.7%), heredofamilial disease (8.4%) and obstruction including calculus (2.9%).

Researchers from three different countries have significantly contributed to a better understanding of kidney diseases. An Australian study has found a link between diabetes and kidney disease. The study involving 3,900 participants with Type 2 diabetes found that 50% of them had faulty kidney function. Thomas (2006), Head of the Biochemistry of Diabetic Complications Laboratory at the Baker Heart Research Institute and the lead author of the study, said that the study is significant as the high incidence of kidney disease in people with Type 2 diabetes shows a possible link between the two. Meanwhile, an American study has found that healthy kidneys are able to keep blood proteins out of the urine due to a kidney structure called the glomerular basement membrane (GBM).

In a study on 'Incidence of Chronic Kidney Disease in India' by Sahoo (2006), 29% of chronic kidney disease patients had diabetic nephropathy. According to Sahoo, (2006), diabetic nephropathy is a progressive disease and will occur in at least 25% of all diabetics. Since it cannot be reversed or cured, all patients of diabetic nephropathy will go on to develop renal failure over a period of time. But less than 10% of all ESRD patients in India receive any meaningful renal replacement therapy. Only 75% of renal transplant patients will survive for 5 years. The only means to decrease the number of ESRD and CKD cases is to control the number of diabetics. Regular monitoring of blood sugar and blood pressure will act as preventives against diabetic nephropathy.

Modi and Jha (2005), in a study providing the first population based ESRD incidence data from India, found that diabetic nephropathy was the most common (44%) cause of ESRD. The study titled 'The incidence of end-stage renal disease in

India: A population-based study' was published in the recent issue of Kidney International, an international magazine published on behalf of the International Society of Nephrology. The study conducted by PGI demonstrates that that 44% of ESRD cases were a result of diabetic nephropathy. A total of 346 new ESRD patients were diagnosed during the study period (2002-2005) and the incidence was found to be 232 per one million people annually. It has also confirmed that diabetic nephropathy is the leading cause of ESRD. The major reason behind diabetics developing kidney disease is uncontrolled diabetes and half-hearted treatment.

In a study done in Renal Unit, Appolo Hospital, Chennai, by Mani (2005) on 2028 patients with chronic renal failure, the diseases leading to renal failure, the presence or absence of reversible factors and their nature and the rate of decline of renal function of the most common conditions have been described and analysed. Seven diseases, chronic interstitial nephritis (27.85%), diabetic nephropathy (26.76%), chronic glomerulonephritis (18.20%), benign nephrosclerosis (10.06%), chronic pyelonephritis (7.29%), focal glomerulosclerosis (3.20%) and autosomal dominant polycystic disease of the kidneys (2.07%), accounted for 95.43% of all the patients.

Mittal et al (1997) studied a total of 835 cases of CRF (chronic renal failure) with a median age of 43 years (range 10 days to 90 years); 67.8% of them were men. Glomerulonephritis (28.6%), diabetic nephropathy (23.2%) and interstitial nephritis (16.5%) were the most common causes of CRF, followed by obstructive nephropathy (6.4%), benign nephrosclerosis (4.1%) and polycystic kidney disease (2%).

HYPERTENSION

Two community-based studies done by Agarwal et al (2005) proved that, in India, diabetes and hypertension are responsible for 40% to 50% of all cases of chronic renal

failure. High blood pressure (hypertension) can be related to chronic kidney disease (CKD) in a number of ways. Hypertension can independently cause CKD, contribute to its development in the setting of other potential causes or even be the result of CKD, as is the case in patients with polycystic kidney disease. Regardless of the circumstances, hypertension is present in approximately 80% of patients with CKD. Studies show that as kidney function worsens, the likelihood that a patient will have hypertension increases.

Johnson and Gabow (2006) studied over one thousand patients with autosomal dominant polycystic kidney disease. These authors demonstrated that the time of renal survival was much shorter for patients with hypertension compared with patients whose blood pressure was normal. Renal survival was defined as the time period before the need for dialysis. They also noted that rates of hypertension increase as kidney function declines (American Heart Association, 2006).

Agarwal (2005) hold that the prevalence of hypertension in chronic kidney disease (CKD) depends on the patient's age and the severity of renal failure, proteinuria and underlying renal disease. As patients with CKD progress to end-stage renal disease (ESRD), 86% are diagnosed with hypertension.

Guidelines from the National Kidney Foundation (2004) counsel physicians to work aggressively to lower blood pressure in patients suffering from both hypertension and diabetes. Targeting blood pressure goals at 130/80 mmHG, the NKF says, will require physicians to "shift to more flexible pharmacological treatment strategies", using multi-drug therapies.

Johns Hopkins University researchers (2004) say that many hypertensive patients are undiagnosed or receiving inadequate treatments. They conclude that both

patients and physicians need to become better educated about the problems associated with chronic kidney disease. Only 11% of the patients in the study had blood pressure levels below the recommended level for kidney patients.

Testing urine for protein content ought to be part of routine medical check-ups, especially for people with diabetes or high blood pressure, according to the National Kidney Foundation (2004). Those with a family history of heart attacks, strokes or kidney failure ought to be especially alert to the possibility of impaired kidney function. If one is prone to urinary tract infections, it is important to be tested regularly, since they can also lead to kidney disease.

Prostrate Obstruction

Men who experience signs and symptoms of a prostate obstruction resulting from benign prostatic hyperplasia (BPH) are three times more likely than other men to develop chronic kidney disease, according to findings of a Mayo Clinic study. The prostate gland is located just below a male's bladder and surrounds the top portion of the urethra, the tube that drains urine from the bladder. Growth of the prostate gland can lead to a bladder outlet obstruction. An obstruction of the bladder can cause inability to or discomfort in emptying the bladder, a slowed stream of urine, frequent urges to void during the night or an enlarged, damaged bladder (Rule, 2007).

Smoking

A study of nearly 8,000 people reported in the Annals of Internal Medicine (2000) discloses that smokers, even relatively light smokers, are more apt to develop kidney problems than non-smokers. Albumin in the urine, a sign of poor kidney function, occurs twice as often in people who smoke a pack a day. When

compared to non-smokers heavy smokers (those who puff more than a pack each day) are more than twice as likely as light smokers to have the problem.

Lead Toxicity

Heavy lead exposure has been known to have toxic effects on the kidney for some time. Now a report published in the Archives of Internal Medicine (2001) discloses that long-term, low-level environmental lead exposure may very well contribute to chronic kidney disease.

Oral Health

U. S. Surgeon General David Satcher's (2000) report on Oral Health in America concurs with several other studies that oral infections are often connected with problems with major organs, such as the kidney. Regular brushing, flossing and dental exams can help maintain overall health, as well as oral health.

SYMPTOMS OF KIDNEY FAILURE

Murtagh et al (2007), in a systematic review, identified the prevalence of the following symptoms in 59 studies on dialysis patients. The symptoms were listed in descending order of prevalence: fatigue/tiredness 71%, pruritus 55%, constipation 53%, anorexia 49%, pain 47%, sleep disturbance 44%, anxiety 38%, dyspnea 35%, nausea 33%, restless legs 30% and depression 27%. Prevalence variations related to differences in symptom definition, period of prevalence and level of severity reported. End stage renal disease patients on dialysis experience multiple symptoms, with pain, fatigue, pruritus and constipation in more than 1 in 2 patients. Patients discontinuing dialysis too have significant symptom burden.

Although several studies have found that the burden of symptoms in patients who are on maintenance hemodialysis is substantial, little is known about renal

providers' awareness of these symptoms. The aim of the study by Weisbord et al (2007) was to assess renal provider recognition of symptoms and their severity in hemodialysis patients. The Dialysis Symptom Index, a 30-item measure of symptoms and their severity, was administered to patients during a routine hemodialysis session. The symptom listed were, feeling tired or lack of energy, dry skin, dry mouth, itching, trouble staying asleep, trouble falling asleep, muscle cramps, cough, bone or joint pain, diarrhea, swelling in legs, worrying, muscle soreness, shortness of breath, difficulty becoming sexually aroused, decreased appetite, numbness or tingling in feet, feeling sad, decreased interest in sex, lightheadedness or dizziness, feeling anxious, nausea, headache, restless legs or difficulty keeping legs still, feeling irritable, constipation, difficulty concentrating, vomitting, feeling nervous and chest pain. Immediately after surveying patients, the renal provider who evaluated the patient completed the Dialysis Symptom Index to report the symptoms that he or she believed were present in that patient. Surveys were completed by 75 patients and 18 providers. Providers underestimated the severity of symptoms pertaining to pain, sexual dysfunction, sleep disturbance and psychological distress.

A total of 92 predialysis patients with chronic kidney disease and 61 general medical outpatients were evaluated using Beck Depression Inventory, Illness Effects Questionnaire, Multidimensional Scale of Perceived Social Support, Satisfaction with Life Scale, Karnofsky Scale, Pittsburgh Sleep Questionnaire and McGill Pain Questionnaire by Cohen et al (2007). Results revealed that with the exception of expected differences in serum creatinine, estimated GFR, Karnofsky score, albumin, and hemoglobin, there were no significant differences between groups. A total of 69% of patients with chronic kidney disease experienced pain; 55.2% had disordered sleep. Pain was associated with quality-of-life indicators, including depression, burden of

illness and life satisfaction. Disordered sleep correlated with depression, illness burden, social support and pain frequency. There were no differences in perception of pain or sleep disturbance between patients with chronic kidney disease and control patients. It was concluded that pain is common in patients with early-stage chronic kidney disease and is associated with patients' perception of lower quality of life. The prevalence of pain, sleep disturbance and abnormal psychological status of patients with chronic kidney disease may be similar to outpatients with other chronic medical illnesses.

Strid et al (2002) assessed the prevalence of gastrointestinal (GI) symptoms in patients on either haemodialysis (HD), peritoneal dialysis (PD) or in the pre-dialysis stage. GI symptoms included colic, nausea, vomiting, cramps, indigestion, chills etc. Patients with and without diabetic nephropathy were also compared. A total of 233 patients with chronic renal failure (128 HD, 55 PD and 50 pre-dialytic patients) completed two self-administered questionnaires: Psychological General Well-Being (PGWB) index and Gastrointestinal Symptom Rating Scale (GSRS). Results showed that, PD patients had more severe reflux and eating dysfunction. In patients with diabetic nephropathy, only eating dysfunction was significantly more common than in the non-diabetic patients. Patients with a high GI symptom profile have impaired psychological general well-being.

A cross-sectional study by Arslanian (2002) reported symptoms that were frequently experienced among a sample of 307 randomly selected hemodialysis patients from 14 dialysis facilities and the effects that these symptoms had on patient functioning and well-being. Medical Outcomes Study Short Form (MOS SF-36), the Mental Component Summary (MCS) Scale and Physical Component Summary (PCS) Scale were the tools used. Some of the common symptoms observed were,

fatigue/sleep, sexual concerns, dry mouth, itchy skin, lack of appetite and restless legs. Patient functioning and well-being were poor when the subjects experienced more and severe symptoms.

The study conducted by Alvarez et al (2001) on 58 chronic hemodialysis patients, was aimed at establishing the frequency and severity of somatic symptoms and emotional distress (anxiety and/or depression) among chronic hemodialysis patients and to study the relationship between them as well as their influence on the perceived health status. They found that, the somatic symptoms are common among patients on chronic hemodialysis and they appear to be associated with emotional distress that influences significantly the perceived health status.

The study by Merkus et al (1999) consisted of 120 chronic haemodialysis (HD) patients and 106 peritoneal dialysis (PD) patients, starting dialysis treatment in 13 Dutch centres. Data were collected 3 months after the start of dialysis. Nine physical symptoms were assessed with a self-administered questionnaire. Patient's self-assessment of QOL was measured with the 36-item MOS Short Form (SF-36™). Results indicated that the most common symptoms in HD and PD were fatigue (82% and 87% respectively) and itching (73% and 68% respectively). It was observed that, with the severity and number of symptoms, the QOL decreased.

EFFECTS OF KIDNEY FAILURE

Dunham (2006) reported that people who have had kidney transplants face a big increase in risk for a variety of cancers, particularly those caused by a virus. The researchers tracked cancer incidence from 1982 to 2003 in nearly 29,000 Australians who got kidney transplants after serious kidney disease. The hypothesis is that the immune suppression results in chronic viral infection, which leads to cancer.

Shlipak (2006) and colleagues of the San Francisco VA Medical Center reported that, even mild kidney disease is associated with poorer physical function in elderly people. While the mechanism behind this relationship remains unclear, the findings suggest that kidney problems may have a direct effect on muscle strength. Severe kidney disease is known to reduce muscle strength and exercise capacity but less is known about how earlier-stage disease may affect fitness. The team correlated cystatin C levels in 3,043 elderly men and women with their performance on a number of tests of physical function and found performance steadily worsened as levels of the protein rose. These findings suggest that physical function is reduced among patients in the early stages of chronic kidney disease. This loss of function may lead to reduced quality of life or subsequent development of mobility limitations or disability.

In a cross-sectional study, Kurella et al (2004) assessed the prevalence of cognitive impairment in persons with chronic kidney disease (CKD) and its relation to the severity of CKD. Participants were 80 subjects with CKD Stages III and IV, not requiring dialysis (CKD) and 80 subjects with CKD Stage V on hemodialysis (end- stage renal disease (ESRD)) with a mean age±standard deviation of 62.5±14.3. Three standardized cognitive tests, the Modified Mini-Mental State Examination, Trailmaking Test B and California Verbal Learning Trial were used for the study. Results indicated that there was a graded relation between cognitive function and severity of CKD. It was concluded that, cognitive impairment is associated with the severity of kidney disease.

The aim of the study by Heiwe and Dahlgren (2003) was to describe and analyse ways in which patients with chronic renal failure in the pre-dialysis phase and patients undergoing haemodialysis or peritoneal dialysis, experienced their physical

and functional capacity in their daily lives. Semi-structured interviews were used to collect data. Analysis of results yielded a system of categories describing patients' experiences of mental and physical fatigue, physical and functional capacity, in terms of effect on performance and endurance and their experience of temporal stress, in terms of lack of time as well as lack of peace in their daily lives.

An analysis of 3,28,000 dialysis patients, conducted by NIH and Walter Reed Army Medical Center clinicians (2003), shows that dialysis patients are at increased risk of developing fungal infections, some of which affect patient's survival.

Some degree of Erectile Dysfunction (ED) is present in 82% of hemodialysis patients, according to University of Pennsylvania researchers (2003). However, ACEIs treatment actually reduces the incidence of ED.

MANAGEMENT OF KIDNEY FAILURE

DIALYSIS

Researching on treating anaemia in chronic renal failure, nephrologists at Health24 (2006) reported that, iron, folic acid and vitamin B12 is needed to make blood and deficiencies corrected. Dialysis helps in the long term and blood transfusions may be necessary although it poses certain risks. Erythropoietin therapy is very effective and is used increasingly. Treating anaemia improves the oxygen-carrying ability of the blood and improves quality of life. Exercise capacity and certain mental functions like concentration, improves. Some patients also report better sleeping habits, appetite and libido. The most common side effect of Erythropoietin Therapy seems to be raised blood pressure. This can be limited by adjusting the dose and careful monitoring. Other minor side effects include flu-like symptoms, joint and

muscle discomfort, fever, headaches, skin rash and skin reaction at the site of the injection.

In a study by Goldberg et al (2006), done on the metabolic and psychological effects of exercise training in hemodialysis patients, it was revealed that the initial work capacity of 7 hemodialysis patients was low and improved after 8 months of training. Exercise was associated with a reduction in the dose of antihypertensive medications in 4 patients and a decrease in phosphate binder therapy in 3 patients. There was also a rise in hematocrit levels and the hemoglobin concentration of 5 males. Plasma glucose levels fell and the glucose disappearance rate improved, while hyperinsulinism decreased during training. There was no change in body weight or diet. Exercise lowered plasma triglyceride levels and raised the high-density lipoprotein cholesterol concentration. Psychological testing (n = 4) demonstrated that exercise training was associated with an improvement in depression, hostility, anxiety, social interaction and outlook for the future. These results suggest that exercise can improve some of metabolic abnormalities and psychological dysfunction, which exists in some dialysis patients.

Researchers at the American Society of Nephrology (2000) opined that daily home hemodialysis is more effective than three-times-weekly dialysis, A two year study showed that the daily regime significantly improved patients' physiological, biochemical and hemotological measurements. An average 45% reduction in blood pressure medication among patients in the daily dialysis group was one of the significant improvements. Patients also recovered from dialysis treatment and resumed normal activities sooner than the patients on the three-times-weekly treatment schedule.

TRANSPLANTATION

In a major breakthrough, Montgomery of Johns Hopkins University (2006), along with his associate surgeons has successfully transplanted kidneys from non-matching donors by using a blood filtration process called 'plasmaphereis' prior to surgery. The high success record of this experimental technique means that a kidney patient can receive a transplant from any donor. The Johns Hopkins team believes that the new technique may eventually double the number of transplants.

Reuters Health (2006) reports that most kidney donors retain normal kidney functioning. Only 7% of donors develop 'medically significant protein-uria'. Goldfard opined that there is a very strong database that attests to the long-term safety of renal donation with respect to kidney function, although he expresses a desire for further tracking of the effects of kidney donation beyond 20 years. This study brings reassurance to patients who may hesitate to ask a relative to donate a kidney for fear that the donor would suffer damage.

Kidney transplant recipients who receive a kidney from a living donor and who have not been on long-term dialysis have a 50% lower risk of organ rejection. The University of Pennsylvania researchers (2006) who studied a population of about 8,500 patients conclude that pre-emptive transplantation of kidneys from living donors without the previous initiation of dialysis is associated with longer allograft survival than transplantation performed after the initiation of dialysis.

University of Michigan researchers (2006) reported that, long term acceptance of transplanted kidneys is lower in older adults. Although younger patients have a higher rate of immediate, acute rejections (23.6% for the 18-49 year old age group compared to 17% for those over 65), the older patient group is more apt to lose the

grafted kidney over a period of time. Only 40% retained a functioning graft after 8 years. Researchers speculate that change in lipoproteins, growth factors and cytokines may increase graft loss in the over 65 year old population.

A recent study confirms that transplant patients live an average of 10 years longer than similar dialysis patients. The New England Journal of Medicine (2006) reports that the increase in life expectancy for transplant patients was greatest for adults between 20-39 and least for adults between 60-74. Transplants offer a better quality of life as well. Complications after surgery are the greatest threat faced by transplant patients but within a few months of receiving the new organ, such excess risks disappear.

Pending FDA approval, University of Michigan researchers (2006) are ready to begin testing a 'Bioartificial' kidney on humans. Part machine, part living tissue, the artificial kidney has already been tested on dogs. It provides nearly 50% of the functional capacity of a normal kidney. The great advantage of the Bioartificial kidney is that it uses living kidney cells and can produce important hormones, provide immune functions and process metabolites. In other respects, it works like a standard hemodialysis machine since it resides outside the body, filters blood and removes excess water and waste products.

MANAGEMENT OF RISK FACTORS

NUTRITION

Cohen and Kimmel (2007) reported that there is a high prevalence of protein-energy malnutrition in the end-stage renal disease population. There are a number of causes of malnutrition in hemodialysis patients, which can often be directly

linked to the uremic state. Failure to achieve adequate nutritional goals may lead to protein-energy malnutrition, which has been linked to decreased survival.

Several studies have also shown a direct association between psychosocial variables, including depression and the nutritional status of hemodialysis patients, in particular the serum albumin concentration. Interventions such as oral nutritional supplements or intradialytic parenteral nutrition may be necessary to improve nutritional status if conservative measures such as nutritional counselling and regular dietician follow-up fail to produce the changes needed to sustain health. In addition, given the potential link between psychological conditions, such as depression and overall nutritional status, interventions designed to screen for and treat psychiatric disorders may lead to improvements in nutritional status and therefore increased survival rates of patients with end-stage renal disease treated with hemodialysis.

A research led by dietician Campbell (2006) studied the diets of 62 pre-dialysis patients ranged between 40-80 years of age, having kidney conditions affected by primary disorders such as high blood pressure and diabetes. Campbell held that people who suffer from severe chronic kidney disease clearly need support with their diets. Claiming that kidney malfunctions could also lead to absence of appetite leading to malnutrition, she cautioned that, when the kidneys function at less than 30%, people often lose their appetites, which can lead to malnutrition and compound their health problems.

Johnson and Usherwood (2006) hold that management of CKD involves regular monitoring of cardiovascular and renal risk factors, identifying and treating common CKD complications and avoiding medications that may worsen CKD. Early detection and timely appropriate management of CKD (especially with respect to

blood pressure control) will substantially reduce kidney failure progression and cardiovascular risk by up to 50%.

To treat the symptom of pruritus (itching) in patients with chronic renal failure undergoing hemodialysis and to investigate the effects of aromatherapy on pruritus, Ro et al (2002) designed a study. The participants were 29 adult patients living in Seoul, Korea. Thirteen patients were assigned to the experimental group and received the aromatherapy massage on the arm 3 times a week for 4 weeks, whereas the control group did not receive any aromatherapy. Pruritus score, skin pH, stratum corneum hydration and pruritus-related biochemical markers were measured before and after the treatment. The results showed that pruritus score was significantly decreased after aromatherapy. Skin pH showed no significant changes in either group while stratum corneum hydration increased significantly in the experimental group after aromatherapy. The results support the use aromatherapy as a useful and effective method of managing pruritus in patients undergoing hemodialysis.

The purpose of the study by Sagawa et al (2001) in Japan was to assess the influence of CBT (Cognitive Behaviour Therapy) on chronic HD patients' daily weight gain. The hypothesis that guided this study was: CBT will decrease the daily weight gain rate during the intervention and for 4 weeks following intervention. In conclusion, a fluid control program was created using CBT. The program was effective for decreasing daily weight gain rate, a decrease that was maintained for at least 4 weeks after the end of the intervention. Nurses and other health care professionals have been identified as one group of individuals who can support and influence HD patients in their dietary habits, thus a better understanding of the efficacy of CBT may influence the development of HD nurses' roles in the future.

STRESS

STRESS AND KIDNEY FAILURE

Agarwal et al (2005) conducted a study on 'Self assessed physical and mental function of haemodialysis patients in India'. The sample included 300 HD patients. The results indicate that patients experienced diminished physical and mental functioning resulting in emotional turmoil and fatigue due to the stress of treatment regimes.

A study on, 'Mood and illness-related stress in dialysis patients' by Laudanski et al (2004) was done on 120 dialysis patients. The results showed that the sample evaluated their disease-related stress mainly as threat and loss and experienced fatigue, dull mood and tiredness during and after dialysis. The study revealed that dialysis patients have a negative perception towards illness and treatment. Due to this, they exaggerated the severity than it truly was and experienced more stress and felt weak and hopeless.

Research by Welch and Austin (1999) on, 'Factors associated with treatment-related stressors in haemodialysis patients' on 86 subjects from USA revealed that the greatest stressors experienced by the sample were fluid restriction, length of dialysis time and vocational limitations. Those new to dialysis had relatively more stressors when compared to others.

STRESS MANAGEMENT

According to Patel et al (2005), social support and patient education is associated with improved outcomes and improved survival in end-stage renal disease. The mechanism by which social support and education exert the salutary effects are unknown but practical aid in achieving compliance, better access to health care,

improved psychosocial and nutritional status and immune function and decreased levels of stress may all play key roles. In their study, care was taken to counsel the subjects and the family members regarding the treatment procedures and the accompanying psychological issues, which made them feel less stressed and worried.

Studies done by Bonadona (2003) revealed that clinical effects of meditation impact a broad spectrum of physical and psychological symptoms and syndromes, including reduced stress, anxiety, pain and depression and enhanced mood and self-esteem. Meditation has been studied in populations with cancer, hypertension, chronic kidney failure and psoriasis. Meditation practice can positively influence the experience of chronic illness and can serve as a primary, secondary and/or tertiary prevention strategy.

The Hampton VA Medical Center (2002), USA, dialysis unit staff members conducted Stress Management Programmes thrice a week for the patients. With the daily challenges a dialysis patient faced just to survive, a stress management program could be seen as yet another source of stress. Therefore, the programme was designed to be brief and simple. It followed the same format as the regular dialysis education programme. After each shift of patients had their treatments initiated and stabilized, the information would be shared in an informal question and answer discussion period, usually no more than 5 minutes. This would be in addition to routine dialysis education. Topics covered during the sessions included definition of stress, types of stressor, manifestation of symptoms and ways to manage stress. After this basic information was covered, the patients played in teams, Monopoly game, rolling the dice and moving the playing pieces while answering questions about stress management. The Monopoly board was placed on an easel that all could see. This time together created a fun atmosphere and increased communication, made

frustrations easier to ventilate and generally lightened the load of the daily life and hectic schedule facing each dialysis patient. They also incorporated some other stress management techniques to the programme such as Progressive Muscle Relaxation, Music Therapy and Aromatherapy.

Research by Batson and Schwartz (1999) on the 'Techniques to improve compliance in hemo and peritoneal dialysis patients', showed that stress management programmes can improve compliance in hemo and peritoneal dialysis patients. They recommended of first psychologically innoculating the patients with reinforcing strategies that they may use on the occasions that they find hard to comply. This will help the patient build up his/her resistance. The ESRD patient, like many other patients with chronic illnesses, suffers from an ailment for which there is no cure, even if the patient complies 100%. It is only natural that periodically patients will be more or less compliant throughout the course of their treatment. Pre-screening, which includes compliance history interviews, ongoing clearance measures with immediate feedback to the patient, home visit supply inventories, will prove to be effective compliance enhancement interventions. Patients, who, because of anxiety, depression or other emotional and behavioural problems have poor compliance might benefit from Cognitive Behavioural Therapy in addition to enhanced monitoring.

Sinclair (1999), in a research on the psychological perspective of prevention and management of renal disease, found that stress management is the foundation for effective self-management. The use of stress management strategies such as psychotherapy, relaxation training, biofeedback, time management and effective communication training help the patients manage hypertension and diabetes, the two risk factors of kidney failure. In a meta-analysis of literature on stress management and hypertension, Spence et al (1999) concluded that multicomponent individualized

cognitive behavioural interventions resulted in greater decreases in blood pressure compared to single component interventions such as relaxation therapy alone.

DEPRESSION

DEPRESSION AND KIDNEY FAILURE

Depression is well established as a prevalent mental health problem for people with ESRD and is associated with morbidity and mortality. However, depression in this population remains difficult to assess and is undertreated. Current estimates suggest a 20 to 30% prevalence of depression that meets diagnostic criteria in this population. The aim of the study by Cukor et al (2007) was to expand the research on psychiatric complications of ESRD and examine the prevalence of a broad range of psychopathology in an urban hemodialysis center and their impact on quality of life. With the use of a clinician-administered semi-structured interview in a randomly selected sample of 70 predominately black patients, >70% were found to have a psychiatric diagnosis- 29% had a current depressive disorder; 20% had major depression and 9% had a diagnosis of dysthymia or depression not otherwise specified; 27% had a major anxiety disorder; substance abuse was found in 19% and 10% had psychotic disorder. Only 13% reported being in current treatment by a mental health provider and only 5% reported being prescribed psychiatric medication by their physician. A total of 7.1% had compound depression or depression coexistent with another psychiatric disorder. The data suggest that cognitive behavioral therapeutic techniques may be especially advantageous in this population of patients who are treated with many medications.

Fabrazzo and Santo (2006) observed that depression is the most frequent psychiatric problem in patients with chronic renal disease and may predict patient

outcome and mortality. Depression is linked to stressful life characterized by many losses and by dependence, which even may lead to suicide. Despite the large number of patients with chronic kidney disease and the economic burden they represent, only a few of the patients receive adequate diagnosis and therapy. DSM-IV criteria for major depression may help in differentiating symptoms of uremia and depression.

Kimura and Ozaki (2006) observed a high prevalence of depressive disorder, between 33% and 50% as reported by dialysis patients, although it is difficult to distinguish the physical symptoms like general fatigue, insomnia and loss of appetite, which are common among dialysis patients, from the psychiatric symptoms seen in depressive patients. Furthermore, co-occurrence of depression has been shown to be one of the risk factors of poor prognosis in dialysis patients, partly because depressed patients are less likely to adhere to their medication regimen and modify their lifestyle appropriately. The efficacy of psychiatric interventions, including pharmacotherapy and psychotherapy, has been examined for dialysis patients with co-occurrence of depression.

Wuerth et al (2005) screened 380 peritoneal dialysis patients for depression using the Beck Depression Inventory (BDI). The mean patient age was 59.9 +/- 14.1 (SD) years, 55% were Caucasian, 51% were male and 39% had diabetes. The mean BDI score was 12.1 +/- 7.7; 49% had a score of 11 or greater; 84% were diagnosed with major depression on direct interviews and offered pharmacologic treatment. The BDI score of these patients at the start of treatment was 17.4+/- 6.6 and at completion of treatment it was 8.4+/- 3.0. Major depression is common in PD patients and is potentially treatable with pharmacologic therapy.

Research by Kimmel and Peterson (2005) revealed that, depression has been thought to be the most common psychiatric abnormality in hemodialysis (HD)

patients. Depression could affect medical outcomes in ESRD patients through several mechanisms. Correlational analyses suggest that stressors and protective factors play roles in mediating the level of depressive affect and associated outcomes. The use of longitudinal analyses and larger samples has confirmed an association of depressive affect and morbidity and mortality in more contemporary ESRD populations.

Depression and anxiety are so common in hemodialysis (HD) patients that Jadoulle et al (2005) found it useful to study the respective contributions of the subjective somatic sensations and of the objective medical comorbidity to psychological distress. They also hypothesized that denial has a protective effect against anxiety and depression and that alexithymia is, on the contrary, a risk factor. In a cross-sectional design, Jadoulle et al (2005) investigated relationships between psychological distress and somatic complaints, Charlson comorbidity index, denial and alexithymia, in a group of 54 patients on HD. State Anxiety Inventory, Hospital Anxiety and Depression Scale, 13-item Short Beck Depression Inventory, Kidney Disease Quality of Life Short Form and 20-item Toronto Alexithymia Scale were used for the study. It was concluded that subjective physical complaints were associated with psychological distress in chronic HD patients, while objective organic comorbidity did not seem to influence their mood and anxiety status. Denial is an efficient coping style against negative emotions, but it can diminish compliance. So, the subjective perception of the disease seems to have an important impact on the anxiety and mood levels, which can also be influenced by the emotional regulation abilities.

A research by Guzman and Nicassiol (2004) examined the role of negative and positive illness schemas as predictors of depression in 109 ESRD patients who were recruited from dialysis clinics throughout the San Diego area. Specifically, the model

evaluated whether negative and positive illness schemas would mediate the relationship between disease severity and depression and social support and depression, in a cross-sectional design. The model was tested with the Cognitive Depression Inventory (CDI), derived from the Beck Depression Inventory (BDI). It was revealed that, negative illness schema contributed to higher BDI and CDI scores and positive illness schema contributed to lower BDI and CDI scores. Furthermore, positive illness schema mediated the relationship between social support and depression in both the BDI and CDI models. The results illustrate the important contribution of illness schemas to depression in this life-threatening disease.

Watnick et al (2003) sought to assess the prevalence of depressive symptoms in patients with ESRD, starting on dialysis therapy. The study also aimed to identify patient characteristics associated with depression and determine whether patients with serious depressive symptoms were receiving treatment. Patients with ESRD who were 18 years and older were interviewed within 10 days of initiating dialysis therapy. The Beck Depression Inventory (BDI) was used to assess depressive symptoms. Results indicated that, among 123 patients, 44% (54 of 123 patients) had scores above the validated cutoff value in the BDI for depression. The results also showed that depressive symptoms are very common at the start of dialysis therapy. Despite a high prevalence, treatment rates are low, even among patients with moderate to severe symptoms of depression.

Extensive research by Yucedal et al (2003) on depression in dialysis patients revealed that many psychiatric disorders can be seen in patients with chronic renal failure. Haemodialysis, which is a renal replacement treatment, causes various psychiatric and psychosocial problems. Patients are dependent on treatment and the

illness causes various problems. In addition, strict diet and continuous treatment are other stress factors.

To evaluate the relationship between level of patient depression and spouse psychosocial status, 55 couples, in which one partner was undergoing chronic hemodialysis therapy for ESRD were interviewed by Daniker et al (2001). Two variables namely, patient depression level and spouse's perceived social support were investigated. Depression was assessed using the Beck Depression Inventory (BDI). Spouses' levels of depressive affect correlated directly with patient BDI scores. A main effect of perceived spousal social support on spousal marital satisfaction indicated that spouses reporting high levels of social support had the least marital strain. Psychosocial status of the spouse has an impact on the level of patient depression and the spouse might be amenable to interventions that could improve patient outcome.

Alvarez et al (2001) attempted to establish the frequency and severity of somatic symptoms and emotional distress (anxiety and/or depression) among chronic hemodialysis patients and study the relationship between them as well as their influence on the perceived health status. The 58 patients who had been on chronic hemodialysis for a minimum of 3 months were the subject of the study. The results indicated that the most frequent and severe symptoms were tiredness, itching, thirst, bone and joint pain and sleep disturbance. The severity of the symptoms was positively associated with female sex and the presence of clinically relevant degrees of anxiety and/or depression. A quarter of the patients were anxious and almost half of them suffered from depression. Emotional disturbances were associated with the severity of somatic symptoms and comorbidity. The study concluded that somatic symptoms are common among patients on chronic hemodialysis and they appear to be

associated with emotional distress (anxiety and depression) that influences significantly the perceived health status.

According to Finkelstein and Finkelstein (2000), the impact of psychosocial factors on the outcome of patients with end-stage renal disease (ESRD) has been receiving more attention recently. Following were the conclusions of Finkelstein and Finkelstein's (2000) study:

- Clinical depression is commonly encountered in patients with ESRD
- BDI is an easily administered questionnaire that is a useful screen for potentially treatable clinical depression in this patient population
- It is challenging to organize an effective medication treatment program of depression for patients with ESRD
- Anti-depressant medication can result in a significant improvement in depressive symptomatology
- Anti-depressant medication is often well tolerated by patients with ESRD.

Finkelstein and Finkelstein (2000) suggested that if the personnel (nurses, physicians, social workers and nephrology trainees) caring for patients with ESRD in the dialysis centers are made increasingly aware of the possible treatment options available for patients with clinical depression, effective treatment strategies can be devised and at least some of the suffering, morbidity and mortality of the patients diminished.

O'donnell and Chungs' (1997) study was designed to evaluate patients with end-stage renal disease (ESRD) for major depressive disorder using three diagnostic approaches, to assess the Beck Depression Inventory as a screening instrument for major depression and to examine the association of anhedonia with a diagnosis of

major depression in ESRD patients who deny depressed mood. Results indicated that the rates of major depression varied from 6 to 34% according to the criteria that were used. The sensitivity of the Beck Depression Inventory was found to be modest. Anhedonia was a helpful clue for diagnosing depression in patients who denied depressed mood.

EFFECTS OF DEPRESSION

Zimmermann et al (2006) assessed the impact of depression on mortality and quality of life of patients with kidney disease. The study was conducted with a cohort of 125 patients seen from 1996 to 2004. Patients undergoing renal replacement therapy were asked to fill in the Beck Depression Inventory (BDI). At the completion of follow-up, 72 patients were alive and 56 answered the BDI and the Medical Outcome Study Short Form General Health Survey (SF-36) to assess quality of life. Main outcome measures were mortality and quality of life. It was concluded that, depression was not associated with mortality of patients with kidney disease when controlling for gender, age and treatment modality. Transplantation was the main factor associated with lower mortality. Depression was, however, a strong predictor of quality of life.

Kimmel et al (2006), to determine whether depressive affect is associated with mortality, did a longitudinal study on 295 outpatients with ESRD treated with HD from three outpatient dialysis units in Washington D.C. Patients were assessed every 6 months for up to 2 years using the Beck Depression Inventory (BDI), age, serum albumin concentration, Kt/V and protein catabolic rate (PCR). Higher levels of depressive affect in ESRD patients treated with HD are associated with increased mortality. The effects of depression on patient survival are of the same order of magnitude as medical risk factors.

Pawar et al (2006) evaluated the changes in cognitive profile and depression in 30 patients undergoing renal transplantation, who were evaluated 1 month before and 3 months after successful renal transplant. Results revealed 86.7% prevalence of depression in ESRD patients as compared to 56.7% in post renal transplant patients. Analysis of neurocognitive functions on LNNB did not reveal any significant impairment. Furthermore, analysis of the Life satisfaction scale revealed most of the patients scored high satisfaction levels despite the stress of their disease. Results on WAPIS brought out significant improvement in intelligence quotient (IQ) after renal transplantation. It was concluded that, successful renal transplant is associated with reduction in depression and improvement in IQ and life satisfaction.

The goals of the study done by Kurella et al (2005) were to compare the incidence of suicide with national rates and to contrast the factors associated with suicide with those associated with withdrawal in persons with ESRD. All individuals who were aged 15 years and older and initiated dialysis between 1995 and 2000, composed the analytic cohort. Death as a result of suicide in the ESRD population and the general US population was ascertained from the Death Notification Form and the Centers for Disease Control and Prevention, respectively. Standardized incidence ratios for suicide among patient subgroups were computed using national data. Results proved that persons with ESRD are significantly more likely to commit suicide than persons in the general population.

MANAGEMENT OF DEPRESSION

Cohen et al (2007) from their research revealed that social support is an understudied, yet important, modifiable risk factor in a number of chronic illnesses, including end-stage renal disease (ESRD). Increased social support has the potential to positively affect outcomes through a number of mechanisms, including decreased

levels of depressive affect, increased patient perception of quality of life, increased access to health care, increased patient compliance with prescribed therapies and direct physiological effects on the immune system. Higher levels of social support have been linked to survival in several studies of patients with and without renal disease. Higher perceived spousal support among women on dialysis was linked to improved compliance and survival in subgroup analyses.

Researchers at Cleveland Clinic (2007) opine that early diagnosis and treatment for depression can reduce distress, as well as the risk of complications and suicide. People who get treatment for depression that occurs at the same time as a chronic disease often experience an improvement in their overall medical condition, a better quality of life and are more easily able to stick to their treatment plans. If the depressive symptoms are related to the physical illness or side effects of medicine, treatment may just need to be adjusted or changed. If the depression is a separate problem, it can be treated on its own. More than 80% of people with depression can be treated successfully with medicine, psychotherapy or a combination of both. Treatment with antidepressant drugs can start to work within a few weeks. These drugs work by altering the level of certain chemicals in the brain, which are responsible for transferring messages between brain cells.

Cukor (2007), in order to study the use of CBT to treat depression among patients on hemodialysis, evaluated about 75 dialysis patients and 50 were engaged in group and individual treatment. CBT focussed on symptom reduction and its time-limited nature made it palatable to patients and CBT fitted well into the medical model of treatment that patients were accustomed to. Sixteen ESRD patients who had major depression were treated individually with a 15-week CBT intervention that focused on the techniques of challenging distorted thoughts and encouraging

behavioural activation. All patients showed a significant decrease in their Beck Depression Inventory (BDI-II) scores at the conclusion of treatment.

The aim of the systematic review by Rabindranath et al (2005) was to assess the effectiveness of psychosocial interventions in the treatment of depression in patients who are dialysed for end-stage renal disease. A comprehensive search strategy was employed to identify all randomised controlled trials (RCTs) relevant to the treatment of depression in dialysis patients. The following databases were searched - MEDLINE (1966 - October 2003), EMBASE (1980 - October 2003), PsycINFO (1972 - October 2003) and The Cochrane Library (issue 3, 2003). Authors of potential studies were contacted, reference lists of identified RCTs and relevant narrative reviews were screened. Authors concluded that data were not available to draw conclusions about the effectiveness of psychosocial interventions in the treatment of depression in the chronic dialysis population, as they did not find any RCTs of psychosocial interventions to treat depression in dialysis patients. This review highlights the need for commencing and completing adequately powered RCTs to address the issue of psychosocial interventions for depression in dialysis patients.

A study by Gibar et al (2005) examined the association between mental adjustment, coping strategies and psychological distress in ESRD patients. Sixty end-stage renal disease (ESRD) patients were interviewed a year or more after they began dialysis, measured by the COPE, Mental Adjustment to Cancer (MAC) and Brief Symptom Inventory (BSI) scales. The main findings indicate that patients with a strong fighting spirit are in less psychological distress. Moreover, patients who tend to use problem focussed strategies rely on a fighting spirit as an adjustment coping style. It was concluded that the ESRD patients in the adjustment phase (patients diagnosed

at least 1 year previously) tend to struggle to lead as normal a life as possible despite the dependency caused by the illness.

The effect of acupressure with massage on fatigue and depression in patients with end-stage renal disease was conducted in 2004 by staff at the National Tainan Institute of Nursing Department of Nursing, in Tainan, Taiwan and the National Taipei College of Nursing Graduate Institute, in Taipei, Taiwan. Sixty two people with end-stage renal disease undergoing hemodialysis participated in the study. They were randomly assigned to either the experimental group, where they received acupressure and massage or the control group, where they continued to receive standard care. Subjects in the experimental group received acupressure for 12 minutes per day, followed by a three-minute massage of the legs, three days a week, for four weeks. Researchers used the revised Piper Fatigue Scale to measure fatigue and the Chinese version of Beck's Depression Inventory was used to measure depression, at the beginning and end of the four-week study. The results of the study revealed a significant decrease in perceived fatigue from the start to the finish of the study for subjects in the experimental group, whereas the control group showed no significant difference in perceived fatigue from pretest to post-test. There was also a significant improvement from pretest to post-test on depression scores for the experimental group. The control group showed no significant difference in depression scores from the beginning to the end of the study. The authors concluded that acupressure with massage could effectively improve fatigue and depression in people with end-stage renal disease and that it should be considered when caring for this population. The authors opined that the assessment of ESRD patients' fatigue and depression should be an essential part of nursing practice and clinicians may consider providing acupressure therapy as a method for improving dialysis patients' fatigue and

depression and nurses, patients and their families could be easily trained to administer acupressure to those who have fatigue and depression.

WELL-BEING / QUALITY OF LIFE

According to Davison (2007), perception of chronic pain, especially in elderly dialysis patients, may be greatly underrecognized. As a result, management of pain, as well as depression and other physical and mental symptoms, may not be adequately addressed in the primary care setting. Clinical interventions such as psychiatric evaluation, pain management and therapy to improve physical and mental symptoms, may markedly impact well-being for CKD patients. Constant reassessment is critical when treating CKD patients. Such an approach may significantly better elderly patients' health-related quality of life.

To determine the effect of progressive muscle relaxation training (PMRT) on anxiety levels and quality of life (QoL) in dialysis patients, Yildirim and Fadiloglu (2006) studied 46 patients who had been treated with dialysis. Patients' Recognition Form (PRF), State and Trait Anxiety Inventory (STAI) and QoL-index for dialysis patients (QoLI-dialysis) were used to collect the necessary data. All three forms were utilised prior to PMRT and 6 weeks after completion of PMRT. The results of the study demonstrated that PMRT for dialysis patients helps decrease their state- and trait-anxiety levels and has a positive impact on QoL.

The current predominance of older patients, diabetic patients and high-comorbidity patients among the hemodialysis (HD) population has probably influenced the definition of the effects of renal disease on health-related quality of life (HRQOL) and these effects can be different in the patient subgroup without these characteristics. Vasquez et al (2003) aimed to assess HRQOL 117 in non-diabetic HD

patients, from 43 Spanish HD centers, aged < 65 yrs and with low comorbidity and study the effects of the demographic, clinical and psychosocial characteristics on their HRQOL. Patients completed the Kidney Disease Quality of Life Short-Form questionnaire (KDQOL-SF) and screening for depressive symptoms, anxiety symptoms and social support. Various sociodemographic and clinical variables were also recorded. HD patients' HRQOL showed a profile similar to that of the general HD population, with low physical health scores but normal mental health scores. The most important independent predictors of HRQOL were anxiety state and depressive symptoms.

Recent research suggests that patients' perceptions may be more important than objective clinical assessments in determining quality of life (QOL) for patients with end-stage renal disease (ESRD). Kimmel et al (2003) interviewed 165 hemodialysis patients using a QOL questionnaire that included the Satisfaction with Life Scale (SWLS) and the McGill QOL (MQOL) scale, which included a single-item global measure of QOL, a Support Network Scale and a Spiritual Beliefs Scale. Results revealed that symptoms, especially pain, along with psychosocial and spiritual factors, are important determinants of QOL of patients with ESRD.

To investigate interrelationships between religious beliefs and psychosocial and medical factors, Patel et al (2002) studied 53 HD patients, of whom 87% were African-Americans. Psychosocial and medical variables included perception of importance of faith (spirituality), attendance at religious services (religious involvement), Beck Depression Inventory, Illness Effects Questionnaire, Multidimensional Scale of Perceived Social Support, McGill QOL Questionnaire scores, Karnofsky scores, dialysis dose, predialysis hemoglobin and albumin levels. Men had higher depression scores, perceived lower social support and had higher

religious involvement scores than women. No other parameters differed between sexes. Perception of spirituality and religiosity did not correlate with age, Karnofsky score, dialysis dose or hemoglobin or albumin level. Greater perception of spirituality and religiosity correlated with increased perception of social support and QOL and less negative perception of illness effects and depression. It was concluded that religious beliefs are related to perception of depression, illness effects, social support and QOL, independently of medical aspects of illness. Religious beliefs may act as coping mechanisms for patients with ESRD.

POSITIVE THERAPY

POSITIVE THERAPY AND STRESS

Rajakumari and Natesan (2006) conducted a study on 'Management of stress in nurses through Positive Therapy'. Out of 60 registered nurses from Sri Ramakrishna Hospital, Coimbatore, Tamil Nadu, 30 were assigned to experimental group and 30 to control group. The age range of the sample was 22-33 years. Initially, stress was high in both the groups. After the administration of Positive Therapy for 10 sessions in 5 weeks, there was a significant reduction in the mean stress of the experimental group (165 before treatment and 125 after treatment); whereas, there was a slight increase in the mean stress in the control group (160 in Test I and 171 in Retest).

Yogatha and Gayatri Devi (2006) conducted a study on 'Management of stress in stress-induced diabetes through Positive Therapy'. The subjects were 50 diabetes patients from Coimbatore, Tamil Nadu, 15 male and 35 female, in the age range of 25-65 years. The subjects had undergone one hour session of Positive

Therapy 3 times a week, for a month. Results showed that Positive Therapy had helped the subjects to reduce the mean stress from 'High' (143.76) to 'Low' (27.38).

Kavitha and Natesan (2005) conducted a study on 'Management of stress and enhancement of general well-being in Haemodialysis patients through Positive Therapy'. From GKNM Hospital, Coimbatore, Tamil Nadu, 36 Haemodialysis patients, in the age range of 40-65 years, were selected to serve as the sample. Initially, the entire sample had 'High' mean stress (22.55). Results revealed that after the administration of Positive Therapy for 6 sessions, one session each on alternate days, for 2 weeks, the mean stress of the sample came down to 'Low' level (6.22); the mean well-being also improved from 'Low' (6.78) to 'High) (16.16).

POSITIVE THERAPY AND DEPRESSION

Rajalakshmi and Natesan (2007) conducted a study on the 'Management of depression and enhancement of well-being in cancer patients through Positive Therapy'. Thirty two cancer patients, 15 male and 17 female, in the age range of 25-65 years, from GKNM Hospital, Coimbatore, Tamil Nadu, were screened and were found to have high depression and low well-being. The entire sample had undergone 10 sessions of Positive Therapy in 2 weeks. Results showed that the mean depression of the sample had come down from 'High' (32.91) to 'Low' (11.25) and their well-being improved from 'Low' (5.3) to 'High' (15.31).

Gayathri Devi and Gayatri Devi (2007) had done a study on 'Management of depression in depressive patients through Positive Therapy'. Thirty depressive patients, in the age range of 18-58 years, from Illakunavar Mental Health Clinic, Madurai, Tamil Nadu, were selected as the sample. The subjects were given

5 sessions of Positive Therapy. The results revealed that, after therapy, their mean depression had come down from 29.83 to 23.83.

Venkateswari and Rohini (2006) conducted a study on the 'Management of pain and depression in institutionalized geriatrics through Positive Therapy'. The sample consisted of 41 institutionalized geriatrics, 20 male and 21 female, in the age range of 60-80 years, from Coimbatore, Tamil Nadu. After the administration of Positive Therapy on the entire sample for 5 sessions on consecutive days, their mean pain reduced from 7.10 to 3.42 and the mean depression reduced from 21.10 to 12.37.

Praveena and Natesan (2004) conducted a study on the 'Management of pain through Positive Therapy' on 30 patients in the age range of 27-75 years, with different types of pain, from Arya Vaidyasala Pharmacy, Coimbatore, Tamil Nadu. The results revealed that, after the administration of Positive Therapy for 7 sessions for 3 weeks, the mean pain of the subjects reduced from 114 to 81.50.

The literature reviewed gives a clear picture of the causes, effects and management of kidney diseases. Pertaining to the psychological aspects of chronic kidney disease, many studies have been done on depression. But stress has been depicted largely as the cause of depression in persons with chronic kidney condition. Not many studies on management of stress and depression in kidney patients have been carried out in India. Probably, even those conducted are neither published nor made accessible on the Internet. There were even some studies stating the non-availability of research findings on the psychological intervention in kidney patients.