



REVIEW ARTICLE

Identification of stress in chronic haemodialysis

Georgia K. Gerogianni¹, Fotoula P. Babatsikou²

1. Lecturer of Nursing, Laboratory of Community Health Nursing, Department of Nursing A', Technological Educational Institute (TEI) of Athens, Greece
2. Assistant Professor of Nursing, Laboratory of Community Health Nursing, Department of Nursing A', Technological Educational Institute (T.E.I.) of Athens, Greece

Abstract

Background: Haemodialysis results in a marked change in the quality of patients' life, since it includes a number of modifications and restrictions, which affect patients' health functioning. End Stage Renal Disease (ESRD) is an irreversible kidney failure, mainly caused by diabetes, hypertension, glomerulonephritis, and polycystic kidney disease. Haemodialysis is the most frequent treatment method for ESRD. However, it has been argued that a number of restrictions and modifications accompany this treatment, which have a detrimental impact on the quality of patients' life and affects individuals' physical and psychological well-being.

Aim: The purpose of this literature review was to investigate the stressors experienced by people undergoing haemodialysis.

Method and Material: Literature review was based on studies and reviews conducted during the period 1994-2009, derived from international (Medline, PubMed, Cinahl) databases concerning stressors of haemodialysis. Key-words were used: haemodialysis, complications, psychological stressors, physiological stressors, psychiatric disorders.

Results: The most frequently reported

psychological concerns are food and fluid restrictions, unemployment, sexual problems, changes in body appearance, limitation in physical activities, frequent hospitalisations, the length of time on dialysis, uncertainty about the future, changes in life style, increased dependence, and sleep disturbances. Regarding the physiological stressors, the most frequently revealed from the literature are fatigue, pain during venepuncture, muscle cramps, itching between treatments, nausea and vomiting.

Conclusions: The topic of stressors is of particular importance among patients receiving dialysis, as these affect their psychological and physiological wellbeing. Thus, the nephrology nurse plays an important role in providing patients with effective psychological support.

Keywords: Stressors, haemodialysis, patients, diet, sleep disturbances.

Corresponding author: Georgia K. Gerogianni, Vaxkilidou 8-10 Street, Athens, 11528,
Tel. 210-7710331,
Email: g_gerogianni@hotmail.com

Introduction

End Stage Renal Disease (ESRD) is an irreversible kidney failure, mainly caused by diabetes, hypertension, glomerulonephritis, and polycystic kidney disease.¹ Many people do not have any symptoms until the end stage of the disease. However, a number of symptoms appear with the decline in kidney function, affecting different systems, for example the gastrointestinal, cardiovascular, pulmonary and nervous systems.² Therefore, artificial methods are essential to replace the function of the kidneys, in order that patients maintain their physiological status.³

The treatment methods available in ESRD are haemodialysis and peritoneal dialysis, which are known as renal replacement therapies.⁴ Of these, haemodialysis has been proved to be the most effective treatment modality, as it results in long



survival rates.⁵ However, it has been argued that a number of restrictions and modifications accompany this treatment, which have a detrimental impact on the quality of patients' life. Furthermore, haemodialysis affects individuals' physical and psychological well-being, since it causes a number of changes in their dietary habits, social life, ability to maintain their job, sexual activity, and body appearance.⁶ Allied to these areas of difficulty, patients are extremely concerned about the future outcome of their condition, because most of them require therapy for the rest of their life.⁷

This paper presents a literature review, which has been conducted to explore the different stressors concerning haemodialysis and provide a critical evaluation of previous work associated with this subject. Literature review was based on studies and reviews conducted during the period 1994-2009, derived from international (Medline, PubMed, Cinahl) databases concerning stressors of haemodialysis. The key-words used were haemodialysis, complications, psychological stressors, physiological stressors, psychiatric disorders.

The most frequently reported psychological concerns are food and fluid restrictions, unemployment, sexual problems, changes in body appearance, limitation in physical activities, frequent hospitalisations, the length of time on dialysis, uncertainty about the future, changes in life style, increased dependence, and sleep disturbances. Regarding the physiological stressors, the most frequently revealed from the literature are fatigue, pain during venepuncture, muscle cramps, itching between treatments, nausea and vomiting.

STRESS OF PEOPLE RECEIVING HAEMODIALYSIS

Much evidence exists to suggest that stress is a significant factor in haemodialysis, since the latter results in a marked change in the quality of patients' life, thus affecting their physiological and

psychological well-being. The most frequently experienced stressors in patients undergoing dialysis are food and fluid restrictions, frequent hospitalisations, limitations in leisure activities, increased dependence, unemployment, sexual problems, and uncertainty about the future.^{8, 9, 10}

It is worth noting that many spouses view haemodialysis as having a detrimental effect on different aspects of their life.¹¹ Additionally, it has been stated that patients' families/carers frequently report loneliness, isolation, frustration, anger, guilt, loss of freedom, and negative effects on their interpersonal relationships, due to the sequelae of the haemodialysis regimen.¹² Thus, it is assumed that this treatment affects both the patients and their family members.

Moreover, a considerable number of studies have been undertaken to evaluate and further investigate the stressors of people undergoing haemodialysis.^{13, 14, 15, 16} These studies are described in the following section of this paper, as they increase the knowledge of health professionals working in the renal setting, regarding the development of effective strategies to reduce stress in these patients.

STUDIES UNDERTAKEN ON STRESSORS CONCERNING HAEMODIALYSIS

Harwood et al,¹³ conducted a study with 226 patients on dialysis treatment in order to investigate stressors and coping in individuals with chronic kidney disease. The participants reported fatigue, sleep problems, peripheral nephropathy, as the most frequent experienced stressors.

Additionally, Welch and Austin¹⁴ conducted a similar study, concerning stressors, coping and depression in haemodialysis. The results have shown that psychosocial stressors were associated with greater use of problem-solving, social-support and avoidance of coping. Additionally, avoidance of coping and psychosocial stressors were related to depression.



Similarly, Cristovao¹⁵ undertook a study, with 1101 patients on regular dialysis for at least one year. Here, findings suggest that the most frequent reported stressors were fatigue, uncertainty about the future, limitation in vacations, loss of bodily function, and cost factors.

Lok¹⁶ conducted a similar study with the same patients as christovao¹⁵, aiming at comparing the relationship between different stressors, coping mechanisms and the quality of life in these people. The results have indicated that psychological stressors were more troublesome than the physiological ones.

Although the findings of each of the described studies differ in the context of ranking order, all of them gave evidence that stressors are troublesome for patients undergoing haemodialysis, affecting their physiological and psychological well-being. Recommendations were made by the researchers for further investigation of this topic and effective identification of strategies for reducing stressors in this population. Before that can be done, there is a need for bridging the gap in knowledge, which can be facilitated by a literature review of the most frequently experienced stressors among patients undergoing haemodialysis.

PSYCHOLOGICAL STRESSORS IN CHRONIC HAEMODIALYSIS

Food and fluid restrictions

Fluid restriction is one of the most frequently experienced stressors among patients receiving haemodialysis.¹⁷ According to Ellis,¹⁸ most of these people are not usually allowed to drink more than 500 ml fluid per day, since fluid excess exacerbates hypertension, and can lead to pulmonary oedema and heart failure.¹⁹

Besides fluid limitations, patients are also troubled by food restrictions, having to avoid foods high in potassium and phosphorous (such as tomatoes, bananas and dairy products), since

hyperkalaemia may cause cardiac arrhythmias and death, while hyperphosphataemia can result in itching and bone disease.¹⁹

Although highly important, compliance with food restrictions is not always possible for different reasons, such as changes in social events and lack of family support.²⁰ On the other hand, a considerable number of patients try extremely hard to adjust effectively to the prescribed dietary regimens, which can lead to loss of appetite and malnutrition. Therefore, effective education and support is essential for them, in order to achieve adherence with their treatment limitations.²¹

Unemployment

It has been asserted that a substantial proportion of people undergoing haemodialysis are confronted with the problem of unemployment, since more than 75% of them are not able to maintain a full-time job after starting their treatment.¹⁰ Thus, inability to maintain the job results in loss of energy, stamina and self-esteem, encouraging patients to feel trapped by their disease.²²

It is worth noting that, in many cases, women undertake the responsibility for dealing with different family issues and provide their husbands with effective care. As a result of this, changes in marital relationships frequently occur, since the wives become nurturing caretakers rather than objects of sexual desire, resulting in men's feelings of demoralisation, self-esteem loss, and depression.²³ Consequently, it becomes apparent that an important issue has emerged from the above discussion regarding the sexual problems of people undergoing haemodialysis, and thus, it requires further exploration.

Sexual problems

Sexual problems are reported as a significant issue concerning patients on haemodialysis.¹⁰ Sexual problems are usually caused by both physiological and psychological factors, such as uraemia,



fatigue, hyperparathyroidism, metabolic disturbances, depression, anxiety, denial of the disease, and changes in body image.²³ Thus, these individuals not only have a decrease in the frequency of sexual intercourse after the initiation of their treatment, but also suffer from impotence and loss of libido. It has been reported that more than 60% of men undergoing chronic dialysis treatment have problems with impotence.¹⁰

Additionally, it is vital to stress the problem of fertility encountered by these people, since it bears close relationship to their sexual dysfunction. A considerable number of male patients are faced with the danger of decreased fertility. Although half of the women remain fertile, the chances of their pregnancy reaching full term with a normal size baby are low, due to spontaneous abortions.¹⁰

Changes in body appearance

As already mentioned, sexual problems are strongly related to changes in the body appearance caused by haemodialysis. A large number of patients are concerned about these changes. Their body appearance is significantly affected due to the fact that their arm usually becomes enlarged after the creation of the arterio-venous fistula. Moreover, the frequent placements of central venous catheters, generalised oedema, loss of weight, decreased muscle tone, various surgical scars and changes in the skin colour have a negative affect on their body appearance.²⁴

Furthermore, it is suggested that patients are worried about their skin colour, since although brown, it is apparent that it is not a tanned skin resulting from the sun. Additionally, children and adolescents undergoing haemodialysis have abnormally short stature, due to their treatment.²⁵ It might be assumed that changes in body appearance result in patients being limited in the style of clothing, which has been reported as a troublesome factors among these

individuals.²⁶

Limitation in leisure activities

Limited leisure activities are reported as another significant issue concerning people on haemodialysis, and are strongly associated with the long time on each treatment, as well as frequent hospitalisations.¹⁷ The fact that patients receive therapy three times a week, each lasting three to four hours, results in them spending a long time sitting on the dialysis chair.¹⁸ Moreover, the time spent on transportation to and from the dialysis unit, as well as resting at home after treatment, has been viewed as a particularly troublesome factor in the context of patients' ability to participate regularly in physical activities.

Apart from the length of time spent on haemodialysis, patients are also worried about the considerable amount of time they spend at hospital, due to different complications caused by their condition. Agreement exists that the physical functioning of these individuals is rather poor, due to their malnutrition, anaemia, hypertension, uraemic muscle dysfunction, and other co-morbidity conditions.²⁷ However, the highest rates in morbidity and mortality are among older people.^{28, 29} Since morbidity is measured in terms of physical and psychological symptoms, it is apparent that it bears close relationship to the psychological wellbeing of these individuals.

For the above reasons, a large proportion of people are unable to participate in any leisure activities and hobbies, usually leading to limited social life.³⁰ The limited social interaction is more troublesome for young patients, as they usually express a stronger desire to maintain their contacts with their friends than older patients. However, this is not absolute and can be debated.

Dependency

As mentioned earlier, the health functioning of patients receiving haemodialysis is rather poor,



and is a significant reason for increased dependency. Apart from the financial dependency caused by unemployment, patients are extremely dependent on the medical staff and family environment.

Most of patients on dialysis feel powerless, as they are unable to maintain their employment or deal effectively with their daily activities.³¹ More importantly, the more their illness becomes severe, the more they become dependent, which creates feelings of being a bit of burden' on others.³² Therefore, it can be viewed as a significant reason why a substantial proportion of patients wish to withdraw from their treatment in an attempt to gain their independence and freedom again.³³

Limitations in vacations

It has been asserted that dependency is closely related to the limitations of holidays. A substantial number of patients avoid going on vacations, since, although they have this possibility, they are afraid of dialysing themselves without supervision. The same author has further stated that few dialysis machines are available in dialysis units for visitors, especially for people who have transmissible diseases. Moreover, the multiple problems these people face, are also viewed as obstacles in the context of their freedom to go on vacations.²⁶

The majority of patients receiving haemodialysis are worried about this factor, as their condition prevents them from enjoying their life.²⁵ Therefore, it is recommended that they need to be provided with the appropriate education, in order to develop adequate knowledge, skills and ability to receive their treatment without supervision, and enjoy their vacations.³⁴

Sleep disturbances

Sleep disturbances is a major concern among people on haemodialysis. Sleep is mostly

disturbed by nightmares concerning the treatment,³⁵ which results in daytime sleepiness and decreased day functioning capacity.³⁶

A study conducted by Walker et al³⁶ with 54 participants, aimed to evaluate the sleep complaints among people on haemodialysis. Findings indicate that the most common problems were delayed sleep onset and frequent nocturnal awakening. Additionally, patients reported disordered breathing events during their sleep, including snoring, apnoeic spells, nocturnal choking episodes, morning headaches and daytime sleepiness. In this study, the older patients expressed more sleep complaints than did younger ones. Despite the small sample, the results echo other reports in the literature concerning the poor sleep quality of patients receiving dialysis.³⁵

Uncertainty about the future

It should be stressed that young people on dialysis express much anxiety about their future since the unpredictability of the illness leads to emotional insecurity.¹⁷ Apart from general well-being which affects patients' uncertainty about the future, waiting for a kidney transplant is an additional stressor, increasing people's worries about their future. Most of them may have to wait for a long time to receive a transplant, are uncertain whether they will acquire an organ or not, and are afraid of having to return to dialysis due to a rejection.³⁷

Nevertheless, it should be noted that patients undergoing haemodialysis are not only subject to the above psychological stressors, but also to a number of physiological ones, which are described in the following section.

PHYSIOLOGICAL STRESSORS IN CHRONIC HAEMODIALYSIS

Fatigue

The most frequent reported physiological



stressors are fatigue, muscle cramps, itching, nausea and vomiting, pain in the access site during venipuncture, and stiffening joints.^{15, 16, 17} However, fatigue has been proved to be the most troublesome stressor among patients undergoing haemodialysis. Fatigue is a decreased ability of physical and mental work and is strongly associated with chronic anaemia, metabolic state, bone or muscle pain, repeated dialysis treatments, sleep disturbance, anxiety, stress, depression, and frustration.^{38, 39}

A substantial number of people feel tired after their treatment, with no motivation or ability to participate in certain activities.²⁶ Consequently, it is apparent that fatigue has a negative impact on patients' health functioning. However, it can be reduced by regular participation in physical activities.⁴⁰

Access site

Research suggests that people undergoing haemodialysis are worried about their access site. Patients feel pain during venipuncture and pain in the access arm between treatments. It is also noteworthy that a large number of people are afraid of bleeding from the vascular access after the treatment while others express fears of infection, and loss of their access site.¹⁷ One factor responsible for infection and loss of the access site is considered to be the multiple venipunctures in the arteriovenous fistula.³⁷

Additionally, nausea, vomiting, cramps, bone pain, and itching are also included in the physiological stressors.³⁷ Moreover, stiffening joints and itching before, during and after their treatment were additional troublesome factors for the participants.¹⁷

Additionally, it has been stated that a number of psychiatric disorders are caused due to the severity of the haemodialysis regimen, the most common of which are depression and anxiety.³ These are displayed through lack of co-operation, feelings of suicide, anger towards health

professionals and denial of their condition.⁴¹ Hence, it is advisable that health professionals develop strategies to provide patients with effective psychological support, in order to help them overcome or reduce their concerns imposed by their treatment.

Conclusion

Haemodialysis results in a marked change in the quality of patients life, since it includes a number of modifications and restrictions, which affect patients' health functioning. This literature review, which has been conducted in an attempt to explore these concerns, has revealed a wide range of information on psychological and physiological stressors of people undergoing haemodialysis. Earlier work has been included in this paper, since it is considered to be very important in the exploration of the subject.

The most frequently reported psychological concerns are food and fluid restrictions, unemployment, sexual problems, changes in body appearance, limitation in physical activities, frequent hospitalisations, the length of time on dialysis, uncertainty about the future, changes in life style, increased dependence, and sleep disturbances. Regarding the physiological stressors, the most frequently revealed from the literature are fatigue, pain in their access site during venipuncture, nausea, vomiting, cramps, itching, and stiffening joints.

The topic of stressors is of particular importance among patients receiving dialysis, as these affect their psychological and physiological wellbeing. Moreover, there has been a striking increase in the number of these people over the last 30 years. Although a number of studies have been undertaken to explore these stressors, there is a necessity for further exploration of this subject in order to maintain and improve the quality of life in this population.



References

1. Gutch CF. Renal physiology and the pathology of renal failure. In: Gutch CF, Stoner MH, & Corea AL. (Eds) Haemodialysis for nurses and dialysis personnel (pp. 25-34), 6th edition. St. Louis, Mosby, Inc, 1999.
2. Mingardi G. Quality of life and end stage renal disease therapeutic programmes. *The International Journal of Artificial Organs* 1998; 21 (11): 741-747.
3. Courts NF and Boyette BG. Psychological adjustment of males on three types of dialysis. *Clinical Nursing Research* 1998; 7 (1): 47-63.
4. Summerton H. End-stage renal failure: the challenge to the nurse. *Nursing Times* 1995; 91 (6): 27-29.
5. Ran KJ and Hyde C. Nephrology nursing practice: more than technical expertise. *European Dialysis and Transplant Nurses Association/ European Renal Care Association Journal* 1999; 35 (4): 4-7.
6. Killingworth A and Van Den Akker O. The quality of life of renal dialysis patients: trying to find the missing measurement. *International Journal of Nursing Studies* 1996; 33 (1): 107-120.
7. Keogh A. Teamwork and the renal nurse. *Nursing Times* 1999; 95 (25): 52-53.
8. Horsburgh ME, Rice VH, and Matuk L. Sense of coherence and life satisfaction: Patient and spousal adaptation to home dialysis. *American Nephrology Nurses' Association Journal* 1998; 25 (2): 219-228.
9. Triantaphilopoulou E, Iphou A, Arvaniti P, Michalopoulos D, Nousis T, Tserkezis G, Velissari E, and Iphos C. Psychological nursing support for elderly patients undergoing chronic regular haemodialysis. *European Dialysis and Transplant Nurses Association/ European Renal Care Association Journal* 1998; 1: 29-31.
10. Dingwall RR. Living with renal failure: the psychological issues. *European Dialysis and Transplant Nurses Association/ European Renal Care Association Journal* 1997; 4: 28-30, 35.
11. Campbell AR. Family caregivers: caring for aging End-Stage Renal Disease partners. *Advances in Renal Replacement Therapy* 1998; 5 (2): 98-108.
12. Coleman C, Piles C, and Poggenpoel M. Influence of caregiving on families of older adults. *Journal of Gerontological Nursing* 1994; 20: 40-49, 56.
13. Harwood L, Wilson B, Locking -Cusolito H, Sontrop J, Spittal J. Stressors and Coping in Individuals with Chronic Kidney Disease. *Nephrology Nursing Journal* 2009; 36 (3): 265-301.
14. Welch JL, Austin JK. Stressors, coping and depression in haemodialysis patients. *Journal of Advanced Nursing* 2001; 33 (2): 200-7.
15. Cristovao F. Stress, coping and quality of life among chronic haemodialysis patients. *European Dialysis and Transplant Nurses Association/ European Renal Care Association Journal* 1999; 35 (4): 35-38.
16. Lok P. Stressors, coping mechanisms and quality of life among dialysis patients in Australia. *Journal of Advanced Nursing* 1996; 23: 873-881.
17. Welch JL and Austin JK. Factors associated with treatment-related stressors in haemodialysis patients. *American Nephrology Nurses' Association Journal* 1999; 26 (3): 318-326.
18. Ellis A. Haemodialysis. *Professional Nurse* 1997; 13 (3): 174-178.
19. Oka M and Chaboyer W. Dietary behaviours and sources of support in haemodialysis patients. *Clinical Nursing Research* 1999; 8 (4): 302-317.
20. Saounatsou M. Relation between response to illness and compliance in haemodialysis patients. *European Dialysis and Transplant Nurses Association/ European Renal Care Association Journal* 1999; 35 (4): 32-34.
21. Ramsdel R and Annis C. Patient education: a continuing repetitive process. *American Nephrology Nurses' Association Journal* 1996; 23 (2): 217-221.
22. Rasgon S, James-Rogers A, Chemleski B, Ledezma, M, Mercado L, Besario M, Trivedi J, Miller M, Dee L, Pryor L, and Yeoh H. Maintenance of employment on dialysis. *Advances in Renal Replacement Therapy* 1997; 4 (2): 152-159.
23. Stewart AM, Kelly B, Robinson JD, and Callender CO. The Howard university hospital transplant and dialysis support group: twenty years and going strong.



- International Journal of Group Psychotherapy 1995; 45 (4): 471-488.
24. Ormandy P. Dialysis (part 2): haemodialysis. *Nursing Standard* 1997; 11 (23): 48-56.
25. Reynolds JM, Wood AJ, Eminson DM, and Postlethwaite RJ. Short stature and chronic renal failure: what concerns children and parents? *Archives of Disease in Childhood* 1995; 73: 36-42.
26. Lacroix A, Jacquemet S, and Assal JP. Patients' experiences with their disease: learning from the differences and sharing the common problems. *Patient Education and Counseling* 1995; 26: 301-312.
27. Johansen KL. *Advances in Renal Replacement Therapy* 1999; 6 (2): 141-148.
28. Locatelli F, Vecchio LD, and Manzoni C. Morbidity and mortality on maintenance haemodialysis. *Nephron* 1998; 80 (4): 380-395.
29. Grapsa I and Oreopoulos DG. Practical ethical issues of dialysis in the elderly. *Seminars in Nephrology* 1996; 16 (4): 339-352.
30. Gudex CM. Health-related quality of life in End Stage Renal Failure. *Quality of Life Research* 1995; 4: 359-366.
31. Hersh-Rifkin M and Stoner MH. Psychological aspects of dialysis therapy. In: Gutch CF, Stoner MH and Corea AL (Eds). *Haemodialysis for nurses and dialysis personnel* (279-287), 6th edition. St.Luis, Mosby, 1999 .
32. Fursland E. Face to face. *Nursing Times* 1999; 95 (44): 36-37.
33. DeVelasco R and Dinwiddie LC. Management of the patient with ESRD after withdrawal from dialysis. *American Nephrology Nurses' Association Journal* 1998; 25 (6): 611- 614.
34. Klang B, Bjorvell H, Berglund J, Sundstedt C and Clyne N. Predialysis patient education: effects on functioning and well-being in uraemic patients. *Journal of Advanced Nursing* 1998; 28 (1): 36-44.
35. Parker KP. Dream content and subjective sleep quality in stable patients on chronic dialysis. *American Nephrology Nurses' Association Journal* 1996; 23 (2): 201-213.
36. Walker S, Fine A and Kryger MH. Sleep complaints are common in a dialysis unit. *American Journal of Kidney Diseases* 1995; 26 (5): 751-756.
37. Gurklis JA and Menke ED. Chronic haemodialysis patients' perceptions of stress, coping, and social support. *American Nephrology Nurses' Association Journal* 1995; 22 (4): 381-388.
38. Brunier G and Graydon J. A comparison of two methods of measuring fatigue in patients on chronic haemodialysis: a visual analogue Likert scale. *International Journal of Nursing Studies* 1996; 33 (3): 338-348.
39. Klang B and Clyne N. Well-being functional ability in uraemic patients before and after having started dialysis treatment. *Scandinavian Journal of Caring Sciences* 1997; 11: 159-166.
40. Stewart P. Exercise and a cycle of life: Help us help ourselves. *Advances in Renal Replacement Therapy* 1999; 6 (2): 184-186.
41. Levy NB. Psychiatric aspects of renal care. In: Levine DZ. (Eds) *Caring for the renal patient* (pp. 196-202). (2nd edition). Philadelphia, W.B. Saunders Copmpany, 1997.