



## Factors Associated with the Social Support of Hemodialysis Patients

*Anastasia THEODORITSI<sup>1</sup>, Maria-Eleni ARAVANTINO<sup>1</sup>, Victoria GRAVANI<sup>1</sup>, Eirini BOURTSI<sup>1</sup>, Chrysoula VASILOPOULOU<sup>1</sup>, Paraskevi THEOFILOU<sup>2</sup>, \*Maria POLIKANDRIOTI<sup>1</sup>*

1. Dept. of Nursing, Technological Institution (TEI) of Athens, Athens, Greece
2. Dept. of Psychology, Health Psychology, Panteion University, Athens, Greece

\*Corresponding Author: Email: mpolik2006@yahoo.com

(Received 14 Feb 2016; accepted 17 May 2016)

### Abstract

**Background:** Support has been gradually acknowledged as a significant factor that exerts a positive influence on hemodialysis patients' lives as well as on the outcome of the disease. The purpose was to explore factors associated with social support of hemodialysis patients.

**Methods:** The sample studied consisted of 258 patients undergoing hemodialysis in public hospitals in Athens, Greece during 2015. Data collection was performed by the method of the interview using a specially designed questionnaire, which included the Multidimensional Scale of Perceived Social Support for the assessment of social support from significant others, family and friends as well as patients' socio-demographic, clinical and other characteristics.

**Results:** Of the 258 participants, 53.9% were male and 65% were over 60 yr. Regarding social support, patients felt highly supported by their significant others and their family (median 6 for both subscales) and less by their friends (median 4.5 neutral support levels). In terms of patients' characteristics, statistically significant association of support from significant others and family was observed with marital status ( $P < 0.001$  and  $P < 0.001$  respectively), place of residence ( $P < 0.001$  and  $P < 0.001$  respectively) and the number of children ( $P = 0.002$  and  $P = 0.007$  respectively). Furthermore, statistically significant association of support from friends was observed with age ( $P < 0.001$ ), marital status ( $P = 0.002$ ), and place of residence ( $P = 0.017$ ).

**Conclusion:** Socio-demographic, clinical characteristics and patients' perceptions are associated with perceived Social Support. Provision of holistic individualized care to hemodialysis patients demands assessment of social support in the daily clinical practice.

**Keywords:** Hemodialysis, Perceived social support, Hemodialysis patients' characteristics

### Introduction

Chronic kidney disease consists a major public health problem, globally that entails significant burden to patients and their families. It is expanding at an alarming rate due to the increased prevalence of diabetes and hypertension as well as to the aging of population (1).

Hemodialysis patients experience tremendous psychosocial burden, mainly attributed to the limitations imposed by the disease including fluid and diet restrictions. Additionally, other stressors that contribute to this burden are physical and

cognitive impairment, failure of adherence to the therapeutic regimen, dependency upon treatment and health professionals and the fear of death (2). Though several advances have been made in understanding hemodialysis treatment however, the beneficial role of social support to hemodialysis patients is slowly being acknowledged (3,4). Social support is obviously one of the most effective ways to facilitate the long-term treatment success and patients' adjustment to illness. More in detail, high social support is associated with

more effective disease management (5). This beneficial effect of social support is may be achieved through psychological, medical, and biochemical factors (5).

Social support is usually provided by family, friends, co-workers, spiritual advisors, health professionals, and members of one's community. Important elements of support are quantity of the supportive network, frequency and reciprocity of supportive interaction and type of supportive interventions (5).

Consequently, it is intriguing to ascertain the critical association between hemodialysis patients' characteristics and support, having as an ultimate goal to enhance patients' participation in the therapeutic regimen, thus improving their quality of life, in the long term.

The aim of the present study was to explore the factors associated with perceived social support of hemodialysis patients.

## Methods

### Study population

The sample-studied consisted of 258 hemodialysis patients at dialysis centers in Athens, Greece, from Feb 2015 to Jun 2015. This sample was a convenience sample. Criteria for including a patient in the study were: a) good comprehension of Greek language; b) undergoing hemodialysis as a method of renal replacement; and c) being above 25 yr old.

Patients who met the entry criteria were informed by the researchers verbally for the purposes of this study, then, the researcher asked for patients' written consent for participation.

Data collection was performed by the completion of a questionnaire using the interview method. The questionnaire was developed by the researchers to serve fully the purposes of the study. The data collected for each patient included: socio-demographic characteristics (e.g. gender, age, marital status, place of residence, number of children, etc.); clinical characteristics (years from first hemodialysis, frequency of hemodialysis per week, duration of hemodialysis, dialysis access cannulation, etc.); therapy characteristics (adhe-

rence to treatment guidelines, etc.); and finally, effects of illness on social life (concealing problem from society, dependency on the dialysis machine, etc.).

The study was approved by the Medical Research Ethics Committee of each dialysis center and conducted in accordance with the Declaration of Helsinki (1989) of the World Medical Association.

### Social Support

To evaluate the social support of the patients the Multidimensional Scale of Perceived Social Support (MSPSS) was used. This scale has been translated and culturally adapted to the Greek standards (6).

The scale is comprised of 3 groups (sub-scales) depending on the source of support (support from significant others, family and friends). Each group of support is consisting of 4 items. These are support from family (3, 4, 8, 11); support from friends (6, 7, 9, 12) and support from significant other (1, 2, 5, 10). Each item expressing 'support' is rated at a 7-point Likert scale from 1 to 7 (varying between 'definitely no' and 'definitely yes').

The sum of 4 items under each subscale gives the subscale score, while the sum of all them gives the overall scale score.

In order to calculate the final score of each subscale of social support, we added the scores of items corresponding to each subscale and divided by the number of items included in each subscale (meaning this is the average). These scores reflect the degree of support felt by the patients. Higher scores indicate higher support.

According to Theofilou et al. (7): a) the subscale of support from family had Cronbach's  $\alpha$ : 0.78; b) the subscale of support from friends had Cronbach's  $\alpha$ : 0.74; c) the subscale of support from significant others had Cronbach's  $\alpha$ : 0.78 and the total score was: 0.62. The Overall alpha was 0.804.

In terms of reliability (8), the internal consistencies of the total scale and the subscales are high, ranging from 0.79 to 0.98 in various samples. Moreover, the test-retest reliability over a 2 to 3-month period produces correlations ranging from 0.72 to 0.85.

### Statistical Analysis

Categorical variables are presented by absolute and relative frequencies (percentages), and quantitative variables are presented by median and interquartile range since they do not follow the normal distribution (tested with Kolmogorov- Smirnov test). To test the existence of association between the characteristics of patients and scores of social support the Kruskal-Wallis or the Mann-Whitney test was performed. The level of statistical significance

was set to  $\alpha=0.05$  for all hypothesis. The analysis was performed with the statistical package SPSS, version 20 (SPSS Inc, Chicago, IL, USA).

## Results

### Characteristics of patients

In Table 1 we observe that 54% of the patients were men, approximately 65% over 60 yr and 54% of the sample was married.

**Table 1:** Patients' characteristics

(N=258)	n (%)
Gender	
<i>Male</i>	139 (53.9)
Age (years)	
<40	18 (7)
41-50	31 (12)
51-60	41 (15.9)
61-70	80 (31)
>70	88 (34.1)
Marital status	
<i>Married/Living together</i>	138 (53.5)
<i>Single</i>	42 (16.3)
<i>Divorced/Widowed</i>	78 (30.2)
Place of residence	
<i>Attica</i>	119 (46.1)
<i>County capital</i>	110 (42.6)
<i>Rural Areas</i>	29 (11.2)
No of children	
<i>None</i>	52 (20.2)
<i>One</i>	76 (29.5)
<i>Two</i>	100 (38.8)
<i>More than two</i>	30 (11.6)
Years from first hemodialysis	
<6	118 (45.7)
6-10	83 (32.2)
>10	57 (22.1)
Informed of the state of their health	
<i>Very</i>	68 (26.4)
<i>Enough</i>	170 (65.9)
<i>Less/Not at all</i>	20 (7.8)
Frequency of hemodialysis (per week) §	3 (3-3)
Duration of hemodialysis (hours)§	4 (4-4)
Followed the therapeutic doctor's orders	
<i>Very</i>	78 (30.2)
<i>Enough</i>	122 (47.3)
<i>Less/not at all</i>	58 (22.5)
Followed properly the proposed diet	
<i>Very</i>	78 (30.2)
<i>Enough</i>	97 (37.6)
<i>Less/not at all</i>	83 (32.2)
Access	
<i>Fistula</i>	146 (56.6)
<i>Graft</i>	49 (19)
<i>Central Line Catheter</i>	63 (24.4)
Conceal problem	
<i>Yes</i>	57 (22.1)
Life depends on the dialysis machine	
<i>Very</i>	115 (44.6)
<i>Enough</i>	115 (44.6)
<i>Less/not at all</i>	28 (10.9)

§ Data presented with median (IQR)

The majority of the sample lived in Attica (46%) and had two children (39%). Regarding onset of the disease, 46% of the patients suffered less than 6 yr from the disease. The majority of the sample stated that they were informed 'enough' about their state of health (66%). In terms of following the therapy or diet, 47% and 37% followed 'fairly enough' the therapeutic doctor's orders and the proposed diet, respectively. Furthermore, 57% of patients had a fistula. Almost all patients underwent hemodialysis three times a week for 4 h. Finally, 22% concealed the problem from society.

### Social Support

As far as social support for patients undergoing hemodialysis is concerned, Table 2 presents the descriptive measures. Patients felt highly supported from their significant others and their

family (median 6 for both subscales) and less of their friends (median 4.5, neutral support levels). Total support score reached to a considerably high median of 5.5.

### Association of social support and patients characteristics

Tables 3 and 4 show the results of the association between social support and patients' characteristics.

**Table 2:** Social support of patients undergoing hemodialysis

Support from	Median (25 <sup>o</sup> -75 <sup>o</sup> )
Significant Others (Range : 1-7)	6 (5-7)
Family (Range : 1-7)	6 (5-7)
Friends (Range : 1-7)	4.5 (4-5.75)
Total (Range : 1-7)	5.5 (4.5-6)

**Table 3:** Association between social support and patients' basic characteristics

Support from	Significant Others Median (25 <sup>o</sup> -75 <sup>o</sup> )	P- Value	Family Median (25 <sup>o</sup> -75 <sup>o</sup> )	P-value	Friends Median (25 <sup>o</sup> -75 <sup>o</sup> )	P- value
Gender						
Male	6 (5-7)	0,072	6 (5-7)	0,169	4.5 (4-5.75)	0,900
Female	6 (4.25-7)		6 (4.5-7)		4.25 (3.75-6)	
Age (years)						
<50	6.25 (5.5-6.75)	0,364	6.25 (5.5-6.75)	0,469	5.25 (4.5-6.25)	<0,001
51-60	6 (5-7)		6 (5-7)		5.25 (4-6)	
61-70	6 (4.5-7)		6 (4.625-7)		4.15 (3.75-5.5)	
>70	5.75 (4.75-7)		5.75 (4.5-7)		4 (3.75-5)*	
Marital Status						
Married	6.5 (5.75-7)**	<0,001	6.375 (5.75-7)**	<0,001	5 (4-6)**	0,002
Single	5 (4.25-6)		5.5 (4.25-6.25)		4.5 (4-6)	
Divorced/Widowed	5 (4-6)		5.25 (4-6.25)		4 (3.75-5)	
Place of residence						
Attica	7 (6-7)**	<0,001	7 (6-7)**	<0,001	4 (4-5.5)	0,017
County capital	5.25 (4.25-6)		5.35 (4.25-6.25)		5 (4-6)**	
Rural Areas	5.5 (4-6.5)		5.75 (4.25-6.25)		4 (3.75-5.75)	
No of children						
None	5 (4.25-6.25)	0,002	5.5 (4.375-6.5)	0,007	4.25 (3.85-5.85)	0,052
One	6 (5-6.75)		6 (5-7)		5 (4-6)	
Two	6 (4.75-7)		6 (5-7)		4.5 (3.75-5.5)	
More than two	6.75 (6-7)§		6.75 (6-7)§		4 (4-5)	

\*Statistically significant different score from two first categories, after bonferonni correction

\*\* Statistically significant different score from all other categories, after bonferonni correction

§ Statistically significant different score from first category, after bonferonni correction

Regarding patients' characteristics (Table 3), a statistically significant association of social support from significant others and family was observed with marital status ( $P<0.001$  and  $P<0.001$ ), place of residence ( $P<0.001$  and  $P<0.001$ ) and the number of children ( $P=0.002$  and  $P=0.007$ , respectively). More specifically, married participants felt higher social support from significant others and family (median 6.5 and 6.375, respectively) than other patients. Similarly, patients who lived in Attica and had more than two children felt more support from significant others and family (median 7 and 6.75, respectively).

Furthermore, statistically significant association of support from friends was observed with age ( $P<0.001$ ), marital status ( $P=0.002$ ), and place of residence ( $P=0.017$ ). Specifically, patients over 70 yr old felt less support from friends (median 4) compared to younger patients. Finally, married

patients and those who lived in a county capital felt more support from their friends (median 5 and 5 respectively).

Regarding clinical characteristics (Table 4), statistically significant association of social support from significant other and family was observed with the years from first hemodialysis ( $P<0.001$  and  $P<0.001$ ), the degree of information ( $P<0.001$  and  $P<0.001$ ), how strictly patients followed therapeutic doctor's orders ( $P<0.001$  and  $P<0.001$ ) and the proposed diet ( $P<0.001$  and  $P<0.001$ ), the method of access ( $P=0.014$  and  $P=0.014$ ), whether patients concealed their problem ( $P<0.001$  and  $P<0.001$ ), and finally if they believed that their life depended on dialysis machine ( $P<0.001$  and  $P<0.001$ ). More specifically, patients who suffered from the disease under 6 yr felt more social support from significant others and family (median 6.375 and 6.25) than patients who suffered from the disease more than 6 yr.

**Table 4:** Association between social support and patients' clinical characteristics

Support from	Significant Others Median (25°-75°)	P- value	Family Median (25°-75°)	P-value	Friends Median (25°-75°)	P-value
Years from first hemodialysis						
<6	6.375 (5.5-7)*	<b>&lt;0,001</b>	6.25 (5.5-7)*	<b>&lt;0,001</b>	5 (4-6)*	<b>0,001</b>
6-10	5.25 (4.25-6.25)		5.5 (4.5-6.5)		4.5 (4-5.5)	
>10	5.75 (4.75-7)		6 (4-6.75)		4 (4-5)	
Informed of the state of their health						
Very	6.875 (6-7)**	<b>&lt;0,001</b>	6.75 (5.85-7)**	<b>&lt;0,001</b>	4.25 (3.625-6)	0,114
Enough	5.625 (4.5-6.5)		5.875 (4.5-6.5)		4.75 (4-5.75)	
Less/Not at all	5.375 (3.75-7)		5.875 (4.125-7)		4.25 (3.375-5)	
Followed the therapeutic doctor's orders						
Very	7 (6-7)**	<b>&lt;0,001</b>	6.875 (6-7)	<b>&lt;0,001</b>	4 (3.5-5.75)	<b>0,008</b>
Enough	5.75 (5-6.5)		6 (5-6.75)		5 (4-6) **	
Less/not at all	5 (4-6)		4.75 (4-6) **		4 (3.75-5)	
Followed properly the proposed diet						
Very	6.625 (5.25-7)	<b>&lt;0,001</b>	6.5 (5.5-7)	<b>&lt;0,001</b>	4.5 (3.75-6)	0,972
Enough	6 (5-7)		6.25 (5-7)		4.5 (4-5.75)	
Less/not at all	5.25 (4-6) **		5.5 (4.25-6.25) **		4.5 (4-5.25)	
Access						
Fistula	6 (5-7)	<b>0,014</b>	6.25 (5.25-7) **	<b>0,014</b>	5 (4-6)	0,267
Graft	5.25 (4.25-6.75) **		5.25 (4.25-7)		4.25 (4-5.5)	
Central Line Catheter	6 (4.25-6.75)		5.75 (4.5-6.75)		4.25 (3.75-5.25)	
Conceal problem						
Yes	4.25 (3.75-6.25)	<b>&lt;0,001</b>	4.75 (3.75-6)	<b>&lt;0,001</b>	4 (3.75-5.25)	<b>0,017</b>
No	6 (5-7)		6.25 (5.25-7)		4.75 (4-6)	
Life depends on the dialysis machine						
Very	6.75 (5-7) **	<b>&lt;0,001</b>	6.5 (5-7)	<b>&lt;0,001</b>	4.25 (3.5-5)	<b>0,009</b>
Enough	5.75 (4.75-6.25)		6 (4.75-6.5) **		5 (4-6) **	
Less/not at all	5.25 (4.25-6.5)		5.25 (4-6.375) **		4.75 (4-5.25)	

\* Statistically significant different score from second category, after bonferonni correction

\*\* Statistically significant different score from all other categories, after bonferonni correction



Similarly, patients 'very' informed of the state of their health (median 6.875 and 6.75), who followed 'very' closely the therapeutic doctor's orders (median 7 and 6.875), who had fistula (median 6 and 6.25), who did not conceal their problem (median 6 and 6.25) and those who believed that their life depended on the dialysis machine 'very much' (median 6.75 and 6.5) felt more social support from significant others and family. On the contrary, patients who followed less the proposed diet felt less social support from significant others and family (median 5.25 and 5.5).

Moreover, statistically significant association with support from friends was observed with the years from first hemodialysis ( $P=0.001$ ), how strictly patients followed therapeutic doctor's orders ( $P=0.008$ ), whether they concealed their problem ( $P=0.017$ ) and finally if they believed that their life depended on dialysis machine ( $P=0.009$ ). More specific, patients who suffered from the disease less than 6 yr felt more social support from friends (median 5) compared to patients who suffered from the disease more than 6 yr. Similarly, for those who followed 'enough' the therapeutic doctor's orders (median 5), those who did not conceal their problem (median 4.75), and those who believed 'enough' that their life depended on dialysis machine (median 5).

## Discussion

The results of the present study showed that the majority of participants were male and over 60 yr. A striking finding is that 47% and 37% of the participants followed 'fairly enough' the doctor's therapeutic orders and the proposed diet, respectively. Given that implementation of an effective treatment demands adherence to therapy, it is therefore surprising that not all participants followed the therapeutic regimen.

A relevant research (9) showed that 81.4% and 74.6% of hemodialysis patients met difficulties with adherence to diet and fluid restrictions, respectively. The significant role of adherence to hemodialysis treatment does not represent a new era of interest; however, it is critical to evaluate socio-demographics and clinical characteristics

associated with support that may influence compliance to therapy, directly or indirectly.

Concerning patients' characteristics, analysis of data revealed that married participants and those having more than two children experienced higher social support from significant others and family.

The results of the current study are in line with previous studies, which demonstrated support provided by family as the highest one (10-12). The way patients perceive social support is associated with satisfaction arising from marriage or family as well as with socioeconomic status (4).

Interestingly, a chronic illness imposes various fluctuations on marital satisfaction. Several reasons are to be held responsible for the change in the dynamic between the couple such as sexual dysfunction, diminished body image and self-esteem, intense psychosocial stress, limited financial resources (patients' loss of productivity or ability to work) and turnover to individual's roles (spouses undertake the role of caregivers).

Psychosocial well-being of hemodialysis patients depends on family unit or cohesion (13). Family responsibilities are modified according to dialysis routine (4, 5). The extent of adaption to the disease within family members seems to play a vital role on the enhanced patients' perceived social support (14). On the other end of the spectrum, adaptive or maladaptive patients' coping strategies are associated with failure to adjust to the new needs or emerging issues in family (15).

Regarding age, participants over 70 yr old felt less support from friends. A plausible explanation is that hemodialysis patients at this age enjoy support from their children (probably living with them). Another suggestion is that their friends being mostly at the same age group are unable to provide essential help.

Taking for granted that, the prevalence of renal failure is increasing in individuals over 65 yr old, older hemodialysis patients consist a group that merit closer attention for several reasons such as co-existence of other disease or living alone. Hemodialysis patients with co-morbidities experience intense stress (17) with fluid limitations and fatigue to be the main sources of stress (16,

17). Significantly more, elderly hemodialysis patients experience functional or cognitive impairment mainly attributed to complexity or severity of the disease in parallel with other problems related to age or geriatric syndromes (18).

The three support sub-scales of the 'Multidimensional Scale of Perceived Social Support' (support from others, family and friends) were associated with the years from hemodialysis, follow of the therapeutic doctor's orders, concealment of the health problem and patients' belief regarding dependency on dialysis machine.

The finding that patients who suffered from the disease under 6 yr felt more support from others, family, and friends, is possibly attributed to their remaining capability to maintain prior family or social roles. Interestingly, as the length of dialysis program is increasing, the burden of the disease is heavier (physically and emotionally).

However, years spent on hemodialysis demand serious consideration since according to relevant research, they may influence attitude towards the disease (19-21). More in detail, illness perceptions vary in a length of time between 0 up to 10 yr (20). Relatively, after a period of 6 yr, patients obtain better illness perception and view hemodialysis as the most effective method of renal replacement (19). Finally, the way patients perceive hemodialysis over time significantly contributes to modification of self-care behavior (21).

The present study also showed a significant association between following doctor's orders and social support (from significant others, family and friends).

Nowadays, there is a growing interest in perceived social support since it may affect positively the disease outcome through various paths such as improving patients' coping mechanisms, minimizing stress, offering help to practical issues (access to health services) and enhancing psychosocial functionality and compliance to therapy including diet and fluid limitations (4, 10, 11). Accordingly, adherence to fluid restrictions is influenced by received satisfaction from social support (22).

Higher social support is associated with longer survival (5). Likewise, higher mortality rates were

observed in hemodialysis patients who received no family support (23).

Patients' belief about dependency on hemodialysis machine was associated with perceived social support. Nevertheless, this association has seldom been the subject of systematic inquiry. Dependency on machine and health professional in conjunction with the great deal of time spent in dialysis centers entail major burden for patients involving lifestyle disruption, fear of complications, stress or feelings of guilt and inadequacy (24-27). Additionally, dialysis machine gives rise to other more stressful issues such as cannulation concerns or implications (thrombosis and infection) (26).

Hemodialysis patients between 30 and 45 yr of age considered their daily life as 'life out of dialysis' while they encountered the life spent on dialysis as 'not real' (27). Relatively, patients perceived hemodialysis machine as a loss of freedom, which however offered them a lifeline (28). It is therefore, a necessary instrument to maintain life but at the same time, it is a reminder of the disease that disrupts normal way of living.

Finally, concealment of health problem was associated with perceived social support. In some cultures, hemodialysis patients have the tendency to hide their disease, thus experiencing social isolation (29). Several explanations may account for the observed disease concealment. Hemodialysis patients may experience a sense of 'pity' by the others, which in turn remind them of their weakness. Moreover, patients frequently believe that other persons may perceive them as disabled. Another proposed explanation is that patients usually pretend to be free of illness due to their deeper need to keep their prior social life or interaction.

Significantly, social and family supports as well as a stable environment are essential elements when providing holistic care to hemodialysis patients (30).

### *Limitations of the study*

The sample of the present study was a convenience one. Consequently, it was not representative

of hemodialysis patients in Greece, thus limiting the ability of results' generalization.

## Conclusion

The challenging landscape in treatment of hemodialysis patients is enhancing support by family, friends and significant others.

Deep understanding of support to hemodialysis patients as well as awareness of socio-demographic and clinical characteristics that may influence support should prompt health professionals to provide individualized beneficial care for patients.

Evaluation of the supportive environment and its' ability to meet patient's needs merit further research.

## Ethical considerations

Ethical issues regarding plagiarism, informed consent, misconduct, data fabrication, double publication and/or submission, and redundancy have been completely observed by the author.

## Acknowledgements

The authors declare that there is no conflict of interests. The study was not funded.

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