



# Which is the Effect of Demographic and Work Characteristics on Fatigue, Quality Of Life and Social Support in Health Staff of Artificial Kidney Units?

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## Abstract

In the research carried out in this work, the levels of fatigue, social support and quality of life were studied among nurses and health professionals employed in the Artificial Kidney Unit. A quantitative survey was carried out by distributing a questionnaire which was answered by 159 doctors and nurses from various private and public units throughout Greece. The questionnaires were answered either in paper form or electronically, while the necessary approvals were obtained from the hospitals where the form was distributed. The results showed that there are moderate levels of fatigue and moderate to high levels of social support, while the factors that negatively affect the quality of life (physical symptoms, anxiety-insomnia, social dysfunction, severe depression) show a low score. Regarding the correlations of the scales with demographic factors, it appears that women score higher on the fatigue and overall quality of life scales, which means that women experience more fatigue and lower quality of life overall than men. Suggestions for further research could be to conduct qualitative research by conducting interviews or focus groups in which the experiences of nurses and doctors working in artificial kidney units will be explored.

**Keywords:** Fatigue; Social Support; Quality of Life; Artificial Kidney Unit; Dialysis Unit

## Introduction

Over the years, multiple studies have been conducted on the importance of social support for healthcare professionals, due to the nature of the profession which makes it particularly demanding and taxing emotionally and physically. All of this research emphasizes the importance of social support for physicians and nurses and identifies it as a predictor of their well-being. One such survey, conducted in 2017 in public hospitals in China, drew important conclusions. The respondents were doctors, nurses, technical staff and

hospital administrators. The purpose of the research was to investigate the relationship between social support and work stress. Through the questionnaire method, the respondents were asked to answer a series of questions related to support from their supervisor, support from colleagues, stress arising from their work and Public Service Motivation (PSM). That is, an individual's "predisposition to respond to incentives based primarily or solely on public institutions" [1]. In fact, this concept refers to the desire or interest of an individual to serve the public interest, whether working in the public or private sector [1]. The results of the research showed that

there is a positive relationship between the support from the supervisor and colleagues and the increase in the PSM index. That is, the more supportive the work environment, the greater the desire of employees to perform their work effectively. On the contrary, a negative relationship appeared between the stress resulting from the insecurity of the profession and the lack of a supportive environment, with the PSM index, while it was concluded that the existence of work support leads to an immediate reduction of stress in the workplace. In fact, it seems that the support of superiors has even stronger effects than that of colleagues. This is due to the fact that, through support from superiors, employees feel that they are working in a fair working environment, where their personal opinions and wishes are taken into account, and they feel more secure at work. For this reason, even greater development of their support is proposed by the researchers. It emphasizes the importance of taking a greater interest in the work and lives of existing health personnel, providing assistance when needed, and recognizing their strengths and achievements when they occur. At the same time, an effort is required to strengthen staff relations, which can be achieved through group activities, in order to prevent conflicts and increase the work efficiency of employees, as cooperation can lead to faster completion of tasks, with a reduced sense of work stress [2].

Numerous researches have been carried out regarding the measurement of the quality of life of health professionals, in various areas of their personal and professional lives. Some of these focus on the physical health of doctors and nurses, such as diet and exercise. Others delve into their psychological condition, mainly the symptoms of depression, anxiety and other disorders. At the same time, efforts are being made to investigate the aspects of the working environment, such as working hours and its demands, which affect the lives of health professionals, but also social relationships, both between colleagues and between employees and their family and friends environment. According to a research carried out in 2012 in China and which studied the quality of life of medical and nursing staff in relation to that of ordinary citizens aged 15-64 years, a burdened health condition of the former was observed compared to the latter. More specifically, greater problems in performing daily activities were identified in healthcare professionals, as well as higher rates of pain/discomfort, and more intense signs of anxiety and depression. These findings are mainly attributed to the high levels of risk associated with the profession, the heavy workload, the bad working environment that usually exists, but also the disproportionate salary in relation to the volume of tasks and the stress resulting from the work stress [3]. From the research it is obvious that the level of quality of life of health professionals is clearly lower than that of the general population living in similar conditions to them. An even greater reduction in quality of life occurs during the

period of COVID-19. One of the surveys conducted on Greek doctors and nurses during the pandemic period, shows that the quality of life of the hospital staff had strong negative psychological effects, experiencing higher levels of anxiety and depression compared to the pre-Covid era. At the same time, there were greater levels of physical exhaustion, but also worse physical health. These effects were more pronounced in the nursing staff than in the medical staff, but also more in the women of the sample than in the men [4]. During the same period, similar research focused on health care personnel working in both intensive care units (ICUs) and emergency departments. From the results of the research, it appeared that mainly male doctors with work experience of more than 15 years, had more chances for a higher percentage of quality of life, than the rest of the sample respondents (women, nurses and inexperienced workers). The key influencing factor in this percentage was again mainly the working hours of the staff, but also various demographic factors that varied among the research participants. As an overall assessment, the percentage of health professionals' quality of life seems to have fallen even more globally during the pandemic [5].

Fatigue in doctors and nurses is a topic that has been extensively researched in recent years, as it is an important aspect of health care and affects the quality of services provided and the well-being of professionals. Some of the research conducted focuses on the causes of fatigue and the effects it brings to their lives and work, while others examine the possibilities of dealing with it in health professionals, through the development of effective prevention and combat programs, as well as the creation as healthy a working environment as possible. More specifically, the factors related to fatigue in doctors and nurses have been analyzed in detail, such as excessive working hours, the many tasks they face, lack of support from the employer and the state, exposure to unpleasant conditions and events and more. At the same time, the effects that all of the above bring to their physical integrity, their psychological state, but also their social environment are analyzed. More recent research focuses on strategies to prevent and deal with the phenomenon of fatigue in health professionals, including training programs, support from the employer and government structures, the promotion of self-care, but also the need to develop healthier environments to reduce fatigue and improve their well-being [6]. Some of these investigations will be mentioned below. From data obtained from 45 countries around the world for the years 1991-2018 and involving more than 100,000 doctors, the results showed that about 67% showed signs of complete fatigue, while 72% said they were going through a period of emotional exhaustion due to their work. The results of this research, as well as other similar researches, brought to light the need for more information for health professionals and the competent organizations, in order to recognize it as a problem and initiate procedures to limit

the phenomenon. The national organizations of the United States of America have already announced the need for the health system to assess the well-being of the doctors working in it, mainly for issues related to the physical and psychological exhaustion they suffer [7]. According to a survey conducted in 2019 in 8 hospitals in Spain, regarding the fatigue experienced by nurses working in oncology units, particularly high rates appeared. More specifically, among a sample of nearly 300 participants, more than 20% said they felt intense exhaustion, while about 40% claimed to be suffering from post-traumatic stress. At the same time, only 18% of participants said they were satisfied with the level of "compassion fatigue" they felt, while almost all participants expressed an interest in emotional management training. The results of the research showed that working in oncology clinics leads nurses to feelings of intense fatigue and stress, capable of pushing them to change work units, but also to reduce their professional satisfaction and the level of care provided to patients [8].

The purpose of this research is to investigate the levels of fatigue, social support and quality of life of health professionals working in the Artificial Kidney Unit in public and private hospitals. In addition, the effect of demographic and work characteristics on the above variables is studied.

## Method

As far as the research is concerned, it was a quantitative design. More specifically, research was conducted through the distribution of questionnaires to health professionals (doctors and nurses). The data was collected in two ways:

- Distribution of questionnaire forms to the artificial kidney units in Attica. In the units where the questionnaire was distributed in paper form, a special permission was first requested from each hospital for its distribution and completion by the sample.
- Distribution of questionnaire in electronic form both in artificial kidney units in Attica, as well as in various regions in Greece.

The sampling performed is convenience sampling. This means that the sample was chosen because the researcher had easy access to it. Here the research population is all health professionals working in the artificial kidney unit in both public hospitals and private clinics. It should be stated here that the respondents were informed about the purpose and ethical and ethical issues from the consent form. It was emphasized to the participants that the data they provide is confidential and absolute anonymity is maintained. Also, the data were used exclusively for the needs of this research. Finally, participation is completely voluntary and respondents could withdraw from completing

the questionnaire at any time they wished. Permission was obtained by the ethics committee of the hospitals. Regarding the entry criteria for the research, these are the following:

- Participants to work as doctors or nurses in the Artificial Kidney Unit at least 1 year before the time of completing the questionnaire
- Participants to work in private or public structures
- Participants to work in the Greek area

The research tool used in this research is divided into 4 categories:

- Social/demographic data: this section consists of 10 questions concerning demographic data (gender, age, etc.) and occupational data (years of service, work in a public or private hospital, etc.)
- Fatigue assessment: The Fatigue Assessment Scale (FAS), developed by Michielsen et al., was used to assess fatigue levels [9]. This scale consists of 10 questions answered on a 5-point Likert scale (from 1 never to 5 always)
- Evaluation of social support: the investigation of social support was done using the Multidimensional Scale of Perceived Social Support (MSPSS) questionnaire [10]. This scale consists of 12 questions on a 7-point Likert scale (from 1 I strongly disagree to 7 I strongly agree). The subscales it contains are the following: Significant other (questions 1,2,5,10), Family Subscale (3,4,8,11), Friends Subscale (6,7,9,12)
- Quality of life assessment: the General Health Questionnaire (GHQ) 28, developed by Goldberg & Hillier (11), was used to assess quality of life. This scale consists of 28 questions that are answered on a 4-point Likert-type scale (from 0 Not at all to 3 - depending on the question, where the closest to 0 indicates a better quality of life) and is divided into 4 factors: Physical symptoms, anxiety/insomnia, social dysfunction, major depression).

Statistical analysis, which was conducted using SPSS statistical package, initially includes the descriptive analysis of the demographic characteristics of the sample, that is, the descriptive analysis of the above variables, which consists of a frequency analysis of the categorical variables and an average analysis of quantitative variables. Then there is the descriptive analysis of the questionnaires scoring both the data as a whole. In closing the statistical analysis, average values of variable fatigue, social support and quality of life is compared between various demographic variables through Independent Samples T test and Anova.

## Results

The sample consists of 159 people, of which 138 (86.8%) are women and 21 (13.2%) men (Table 1).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	138	86.8	86.8	86.8
	Male	21	13.2	13.2	100
	Total	159	100	100	

**Table 1:** Gender.

The age group of the sample consists of 6 (3.8%) people up to 25 years old, 47 (29.6%) 26 to 35 years old, 50 (31.4%)

people 36 to 45 years old, 12 (7.5%) people 46 to 55 years old and 12 (7.5%) people over 55 years old (Table 2).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	To 25	6	3.8	3.8	3.8
	26-35	47	29.6	29.6	33.3
	36-45	50	31.4	31.4	64.8
	46-55	44	27.7	27.7	92.5
	> 55	12	7.5	7.5	100
	Total	159	100	100	

**Table 2:** Age.

The educational level of the sample consists of 13 (8.2%) people high school graduates, 32 (20.1%) people graduates of private schools (e.g. colleges), 69 (43.4%) people with

some university degrees and 45 (28.3%) people holding master's or doctoral degree (Table 3).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Lyceum	13	8.2	8.2	8.2
	Private Studies (College)	32	20.1	20.1	28.3
	Holder of a degree from Universities / Technological Educational Institutes	69	43.4	43.4	71.7
	Master's/PhD holder	45	28.3	28.3	100
	Total	159	100	100	

**Table 3:** Educational level.

The marital status of the sample consists of 42 (26.4%) people single, 17 (10.5%) people in a relationship, 86

(54.1%) people married or with a cohabitation agreement, 12 (7.5%) divorced and 2 (1.3%) widowed people (Table 4).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	42	26.4	26.4	26.4
	In relation	17	10.7	10.7	37.1
	Married or registered partnership	86	54.1	54.1	91.2
	Divorced	12	7.5	7.5	98.7
	Widower	2	1.3	1.3	100
	Total	159	100	100	

**Table 4:** Marital status.

The number of children in the sample consists of 70 (44%) people without children, 25 (15.7%) with one child,

52 (32.7%) with 2 children, 11 (6.9%) with 3 children and 1 (.6%) person which did not respond (Table 5).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	70	44	44.3	44.3
	1	25	15.7	15.8	60.1
	2	52	32.7	32.9	93
	3	11	6.9	7	100
	Total	158	99.4	100	
Missing	System	1	0.6		
Total		159	100		

**Table 5:** Number of children.

The years of service of the sample consist of 57 (35.8%) people who did not answer, 31 (19.5%) people with 0 to 5

years, 24 (15.1%) people with 16 to 20 years 47 (29.6%) people with more than 20 years of service (Table 6).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		57	35.8	35.8	35.8
	0-5	31	19.5	19.5	55.3
	16-20	24	15.1	15.1	70.4
	Άνω των 20	47	29.6	29.6	100
	Total	159	100	100	

**Table 6:** years of service.

The job position of the sample consists of 2 (1.3%) medical specialists, 14 (8.8%) medical specialists, 116 (73%)

nurses, and 27 (17%) nursing assistants (Table 7).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Trainee doctor	2	1.3	1.3	1.3
	Specialist doctor	14	8.8	8.8	10.1
	Nurse	116	73	73	83
	Nursing Assistant	27	17	17	100
	Total	159	100	100	

**Table 7:** Job Vacancy.

The workplace of the sample consists of 64 (40.3%) people in the public sector and 95 (59.7%) in the private

sector (Table 8).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Public hospital	64	40.3	40.3	40.3
	Private clinic/hospital	95	59.7	59.7	100
	Total	159	100	100	

**Table 8:** Field of work.

One hundred and five (66%) people do not have a position of responsibility in their work, while 54 (34%) have

a position of responsibility in their work (Table 9).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	105	66	66	66
	Yes	54	34	34	100
	Total	159	100	100	

**Table 9:** Position of responsibility.

The years of service in the artificial kidney unit of the sample consisted of 16 (10.1%) non-respondents, 75 (47.2%) persons from 0 to 5 years, 15 (9.4%) persons from

6 to 10 years, 10 (6.3%) persons 11 to 15 years, 17 (10.7%) persons from 16 to 20 years and 26 (16.4%) persons over 20 years (Table 10).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		16	10.1	10.1	10.1
	0-5	75	47.2	47.2	57.2
	06-Oct	15	9.4	9.4	66.7
	Nov-15	10	6.3	6.3	73
	16-20	17	10.7	10.7	83.6
	>20	26	16.4	16.4	100
	Total	159	100	100	

**Table 10:** Years of experience in the Dialysis Unit.

The mean value of the MPSS subscale for the whole sample was  $m=5.66$  ( $SD=1.35$ ) with a minimum value of  $min=1$  and a maximum value of  $max=7$ , the mean value of the friends subscale for the whole sample was  $m=5.28$  ( $SD=1.47$ ) with a minimum value of  $min=1$  and a maximum value of  $max=7$ , the mean value of the family subscale for the entire sample was  $m=5.53$  ( $SD=1.42$ ) with a minimum value of  $min=1$  and a maximum value of  $max=7$ , the mean value of social support for the entire sample was  $m=5.49$  ( $SD=1.29$ ) with a minimum value of  $min=1$  and a maximum value of  $max=7$ . The mean value of the MPSS subscale for the public sector was  $m=5.45$  ( $SD=1.51$ ), while for the private

sector it was  $m=5.8$  ( $SD=1.23$ ), the mean value of the family subscale for the public sector was  $m=5.32$  ( $SD=1.67$ ), while for the private sector it was  $m=5.67$  ( $SD=1.22$ ), the average value of the friends subscale for the public sector was  $m=5.07$  ( $SD=1.55$ ), while for the private sector it was  $m=5.67$  ( $SD=1.22$ ), the average value of social support for the public sector was  $m=5.25$  ( $SD=1.42$ ), while for the private sector it was  $m=5.62$  ( $SD=1.18$ ).

The average value of the fatigue questionnaire for the entire sample was  $m=2.5$  ( $SD=.53$ ) with a minimum value of  $min=1$  and a maximum value of  $max=4.2$  (Table 11).

		MPSS	Family	Friends	Fatigue	Social support	Factor A: Physical symptoms	Factor B: Anxiety-Insomnia	Factor C: Social dysfunction	Factor D: Severe depression	Total GHQ-28
N	Valid	159	159	159	159	159	158	159	159	159	158
	Missing	0	0	0	0	0	1	0	0	0	1
	Mean	5.6572	5.5283	5.283	2.5063	5.4892	1.0859	1.0108	0.9928	0.3477	0.8626
	Std. Deviation	1.35407	1.42341	1.46804	0.53471	1.28554	0.63088	0.69384	0.4336	0.49917	0.46787
	Minimum	1	1	1	1	1	0	0	0.14	0	0.07
	Maximum	7	7	7	4.2	7	2.57	3	2.57	2.71	2.57

**Table 11:** Average values of scales and subscales.

## Independent Samples T-Test and Anova for Fatigue, Social Support and GHQ-28 Quality of Life for Demographic Features

### Gender

The variable fatigue does not have the same dispersion in the two groups (women and men), since the Levene's Test gave  $f = 5.68$ ,  $p = .02$ , it also has the same average in both groups, since  $t(157) = 3.07$ ,  $p = .00$  (Table 12). Women

have a highest average price. Variable social support has the same dispersion in both groups (women and men), since Levene's test gave  $f = 2.02$ ,  $p = .16$ , it also has the same average in both groups, since  $t(157) = -1.62$ ,  $p = .11$  (Table 12). The variable quality of life has the same dispersion in both groups (women and men), since the Levene's Test gave  $f = 1.04$ ,  $p = .31$ , but it does not have the same average in both groups, since  $t(157) = 2.33$ ,  $p = .02$  (Table 12). Women have a highest average price.

		Levene's Test for Equality of Variances t-test for Equality of Means								
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Fatigue	Equal variances assumed	5.68	0.018	2.232	157	0.027	0.27609	0.1237	0.03176	0.52041
	Equal variances not assumed			3.067	36.75	0.004	0.27609	0.09003	0.09363	0.45854
Social support	Equal variances assumed	2.02	0.157	-1.62	157	0.108	-0.48493	0.29959	-1.07667	0.10681
	Equal variances not assumed			-2.03	32.492	0.051	-0.48493	0.23927	-0.97202	0.00215
GHQ-28 Quality of life	Equal variances assumed	1.04	0.311	2.334	156	0.021	0.25769	0.11039	0.03963	0.47574
	Equal variances not assumed			2.708	27.904	0.011	0.25769	0.09515	0.06275	0.45262

**Table 12:** Independent Samples Test Gender.

### Position

Variable fatigue has the same dispersion in both groups (has a position of responsibility and has no responsibility), since Levene's test gave  $f = .25$ ,  $p = .62$ , it also has the same average in both groups, since  $t(157) = .23$ ,  $p = .82$  (Table 13). Variable social support has the same dispersion in both groups (has a position of responsibility and has no position

of responsibility), since Levene's test gave  $f = .09$ ,  $p = .77$ , it also has the same average value in both groups, since  $t(157) = .55$ ,  $p = .59$  (Table 13). The variable quality of life has the same dispersion in both groups (has a position of responsibility and has no responsibility), since the Levene's Test gave  $f = .15$ ,  $p = .70$ , it also has the same average in both groups, since  $t(157) = 1.01$ ,  $p = .31$  (Table 13).

		Levene's Test for Equality of Variances t-test for Equality of Means								
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Fatigue	Equal variances assumed	0.25	0.615	0.231	157	0.818	0.02074	0.08981	-0.15665	0.19813
	Equal variances not assumed			0.24	119.395	0.811	0.02074	0.08632	-0.15017	0.19165
Social support	Equal variances assumed	0.09	0.767	0.545	157	0.587	0.11758	0.21576	-0.30858	0.54374
	Equal variances not assumed			0.552	110.811	0.582	0.11758	0.21309	-0.30468	0.53984
GHQ-28 Quality of life	Equal variances assumed	0.15	0.695	1.014	156	0.312	0.07958	0.07847	-0.07542	0.23458
	Equal variances not assumed			1.024	110.365	0.308	0.07958	0.07771	-0.07441	0.23357

**Table 13:** Independent Samples Test Position.

#### Per age group

The variable fatigue has the same dispersion for each age group, since the Levene's Test gave  $f(4,154) = 1.45$ ,  $p = .22$  (Table 14). Its average value for each age group is the same since Anova gave  $f(4,154) = 1.07$ ,  $p = .37$  (Table 14). Variable social support has the same dispersion for each age group, since the Levene's Test gave  $f(4,154) = 1.48$ ,  $p$

$= .21$  (Table 14). Its average value for each age group is the same since ANOVA gave  $f(4,154) = .87$ ,  $p = .49$  (Table 14). The variable quality of life the same dispersion for each age group, since Levene's Test gave  $f(4,154) = 1.49$ ,  $p = .21$  (Table 14). Its average value for each age group is the same since Anova gave  $f(4,153) = 1.00$ ,  $p = .37$  (Table 14).

		Levene Statistic	df1	df2	Sig.
Fatigue	Based on Mean	1.448	4	154	0.221
	Based on Median	0.98	4	154	0.421
	Based on Median and with adjusted df	0.98	4	146.299	0.421
	Based on trimmed mean	1.335	4	154	0.26
Social support	Based on Mean	1.484	4	154	0.21
	Based on Median	1.161	4	154	0.33
	Based on Median and with adjusted df	1.161	4	134.116	0.331
	Based on trimmed mean	1.341	4	154	0.257
GHQ-28 Quality of life	Based on Mean	1.49	4	153	0.208
	Based on Median	0.592	4	153	0.669
	Based on Median and with adjusted df	0.592	4	130.971	0.669
	Based on trimmed mean	1.238	4	153	0.297

**Table 14:** Test of Homogeneity of Variances Age.

#### Per Educational Level

Variable fatigue does not have the same dispersion for each educational level, since the Levene's Test gave  $f(3,155)$

$= 2.91$ ,  $p = .04$  (Table 15). Its average value for each age group is the same since Kruskal Wallis gave  $(3) = .77$ ,  $p = .86$  (Table 15). Variable social support has the same dispersion for each



educational level, since the Levene's Test gave  $f(3,155) = 1.33$ ,  $p = .27$  (Table 15). Its average value for each group is the same since Anova gave  $f(3,155) = 1.28$ ,  $p = .28$  (Table 15). The variable quality of life the same dispersion for each

educational level, since the Levene's Test gave  $f(3,154) = 2.10$ ,  $p = .10$  (Table 15). Its average value for each age group is the same since Anova gave  $f(3,154) = .59$ ,  $p = .62$  (Table 15).

		Levene Statistic	df1	df2	Sig.
Fatigue	Based on Mean	2.912	3	155	0.04
	Based on Median	1.57	3	155	0.2
	Based on Median and with adjusted df	1.57	3	143.37	0.2
	Based on trimmed mean	2.814	3	155	0.04
Social support	Based on Mean	1.329	3	155	0.27
	Based on Median	1.477	3	155	0.22
	Based on Median and with adjusted df	1.477	3	150.71	0.22
	Based on trimmed mean	1.336	3	155	0.27
GHQ-28 Quality of life	Based on Mean	2.103	3	154	0.1
	Based on Median	1.136	3	154	0.34
	Based on Median and with adjusted df	1.136	3	140.09	0.34
	Based on trimmed mean	1.908	3	154	0.13

**Table 15:** Test of Homogeneity of Variances education.

Test Statistics <sup>a,b</sup>	Fatigue
Kruskal-Wallis H	0.773
df	3
Asymp. Sig.	0.856
a. Kruskal Wallis Test	
b. Grouping Variable: Education	

**Table 16:** Kruskal-Wallis Age.

		Sum of Squares	df	Mean Square	F	Sig.
Fatigue	Between Groups	0.267	3	0.089	0.31	0.82
	Within Groups	44.906	155	0.29		
	Total	45.174	158			
Social support	Between Groups	6.331	3	2.11	1.28	0.28
	Within Groups	254.783	155	1.644		
	Total	261.114	158			
GHQ-28 Ποιότητα ζωής	Between Groups	0.39	3	0.13	0.59	0.62
	Within Groups	33.978	154	0.221		
	Total	34.368	157			

**Table 17:** ANOVA Age.

**By Marital Status**

The variable fatigue has the same dispersion for each marital status, since Levene's test gave  $F(4,154)=1.47$ ,  $p=.22$  (Table 18). Its mean value for each group is the same since ANOVA gave  $F(4,154)=.43$ ,  $p=.79$  (Table 18). The variable social support has the same dispersion for each marital status, since Levene's test gave  $F(4,154)=.53$ ,  $p=.71$

(Table 18). Its mean value for each group is the same since ANOVA gave  $F(4,154)=2.17$ ,  $p=.08$  (Table 18). The variable quality of life the same dispersion for each marital status, since Levene's test gave  $F(4,153)=1.48$ ,  $p=.21$  (Table 18). Its mean value for each group is the same since ANOVA gave  $F(4,153)=.79$ ,  $p=.53$  (Table 18).

		Sum of Squares	df	Mean Square	F	Sig.
Fatigue	Between Groups	0.496	4	0.124	0.43	0.79
	Within Groups	44.678	154	0.29		
	Total	45.174	158			
Social support	Between Groups	13.944	4	3.486	2.17	0.08
	Within Groups	247.17	154	1.605		
	Total	261.114	158			
GHQ-28 Quality of life	Between Groups	0.694	4	0.173	0.79	0.53
	Within Groups	33.674	153	0.22		
	Total	34.368	157			

**Table 18:** Test of Homogeneity of Variances Marital status.

**By Years of Service**

The variable fatigue has the same dispersion for each group of years of service, since Levene's test gave  $F(2,99)=1.22$ ,  $p=.30$  (Table 19). Its mean value for each group is the same since ANOVA gave  $F(2,99)=1.11$ ,  $p=.33$  (Table 19). The variable social support has the same dispersion for each group of years of service, since Levene's test gave

$F(2,99)=.13$ ,  $p=.88$  (Table 19). Its mean value for each group is the same since ANOVA gave  $F(2,99)=.22$ ,  $p=.81$  (Table 19). The variable quality of life the same dispersion for each group of years of service, since Levene's test gave  $F(2,98)=.83$ ,  $p=.44$  (Table 19). Its mean value for each group is the same since ANOVA gave  $F(2,99)=1.33$ ,  $p=.27$  (Table 19).

		Levene Statistic	df1	df2	Sig.
Fatigue	Based on Mean	1.22	2	99	0.3
	Based on Median	0.786	2	99	0.46
	Based on Median and with adjusted df	0.786	2	96.53	0.46
	Based on trimmed mean	1.198	2	99	0.31
Social support	Based on Mean	0.125	2	99	0.88
	Based on Median	0	2	99	1
	Based on Median and with adjusted df	0	2	83.32	1
	Based on trimmed mean	0.05	2	99	0.95
GHQ-28 Quality of life	Based on Mean	0.833	2	98	0.44
	Based on Median	0.6	2	98	0.55
	Based on Median and with adjusted df	0.6	2	81.83	0.55
	Based on trimmed mean	0.79	2	98	0.46

		Sum of Squares	df	Mean Square	F	Sig.
Fatigue	Between Groups	0.654	2	0.327	1.11	0.333
	Within Groups	29.089	99	0.294		
	Total	29.744	101			
Social support	Between Groups	0.804	2	0.402	0.22	0.805
	Within Groups	183.669	99	1.855		
	Total	184.473	101			
GHQ-28 Quality of life	Between Groups	0.534	2	0.267	1.33	0.27
	Within Groups	19.728	98	0.201		
	Total	20.261	100			

**Table 19:** Test of Homogeneity of Variances Years of service.

#### Per Job Position

The variable fatigue has the same dispersion for each job, since Levene's test gave  $F(3,155)=2.34$ ,  $p=.08$  (Table 20). Its mean value for each group is not the same since ANOVA gave  $F(3,255)=3.26$ ,  $p=.02$  (Table 20). The social support variable has the same variance for each job, since Levene's test gave

$F(3,155)=2.15$ ,  $p=.1$  (Table 20). Its mean value for each group is the same since ANOVA gave  $F(3,155)=.44$ ,  $p=.73$  (Table 20). The variable quality of life does not have the same dispersion for each job, since Levene's test gave  $F(3,154)=3.55$ ,  $p=.016$  (Table 20). Its mean value for each group is the same since Kruskal Wallis gave  $H(3)=4.32$ ,  $p=.23$  (Table 20).

		Levene Statistic	df1	df2	Sig.
Fatigue	Based on Mean	2.341	3	155	0.08
	Based on Median	1.528	3	155	0.21
	Based on Median and with adjusted df	1.528	3	148.54	0.21
	Based on trimmed mean	2.153	3	155	0.1
Social support	Based on Mean	0.572	3	155	0.63
	Based on Median	0.594	3	155	0.62
	Based on Median and with adjusted df	0.594	3	117.79	0.62
	Based on trimmed mean	0.545	3	155	0.65
GHQ-28 Quality of life	Based on Mean	3.552	3	154	0.02
	Based on Median	2.25	3	154	0.09
	Based on Median and with adjusted df	2.25	3	144.35	0.09
	Based on trimmed mean	3.252	3	154	0.02

		Sum of Squares	df	Mean Square	F	Sig.
Fatigue	Between Groups	2.677	3	0.892	3.26	0.02
	Within Groups	42.497	155	0.274		
	Total	45.174	158			
Social support	Between Groups	2.199	3	0.733	0.44	0.73
	Within Groups	258.915	155	1.67		
	Total	261.114	158			
GHQ-28 Quality of life	Between Groups	1.113	3	0.371	1.72	0.17
	Within Groups	33.255	154	0.216		
	Total	34.368	157			

Test Statistics <sup>a,b</sup>	GHQ-28 Quality of life
Kruskal-Wallis H	4.32
df	3
Asymp. Sig.	0.229

<sup>a</sup>Kruskal Wallis Test

<sup>b</sup>Grouping Variable: Job position

**Table 20:** Test of Homogeneity of Variances job position.

## Discussion

The purpose of this research is to investigate the levels of fatigue, social support and quality of life of health professionals working in the Artificial Kidney Unit in public and private hospitals. In addition, the effect of demographic and work characteristics on the above variables is studied [11].

With regard to the social support received by the sample, it seems that this ranges from moderate to high levels. The family scale gathers a higher average, which means that most of the social support received by the sample is through the family environment and less than the friendly one. Social support appears to be similar in other research such as that of Theofilou, et al. [12], where the parameters of social support were also investigated in 165 health professionals in Macedonia and Thrace. In relation to the levels of fatigue, these are evaluated as moderate to low, while the score in the subscales of the quality of life also seems to be low. The lowest score is concentrated in relation to major depression, followed by social dysfunction, physical symptoms and anxiety, where they have a higher score but still low relative to the maximum. These results show that the sample, although showing a degree of fatigue, does not seem to seriously affect the quality of life of the respondents, while the social support networks exist to a relatively high degree. In the research of Theofilou, et al. [13] the levels of social support both overall and for each individual sector were higher in emergency department nurses, especially in relation to the public sector of dialysis units here and in fact Theofilou's research was only carried out in public hospital nurses. This could demonstrate variation in social support depending on the department in which nurses work. Fatigue levels are relatively low compared to expected. Research that has been carried out in previous research in general for nurses of various units shows high levels of fatigue [7,8]. The same applies to the research conducted in dialysis unit. Similarly, it seems that the level of quality of life is relatively higher than previous research, where the quality of life is rated by the health professionals themselves as low [3], and this is also true in Greece, especially after the pandemic [4]. The same happens with the findings of Theofilou, et al. [12] where in all 4 factors of quality of life, scores are almost twice as high

in all or more, indicating worse quality of life. Of course, here it must be said that both surveys were carried out in 2021 when the health system was still fighting the pandemic which obviously affected the mental health of health professionals.

Finally, regarding the correlations of the scales with demographic factors, it appears that women score higher on the fatigue and overall quality of life scales, which means that women experience more fatigue and lower quality of life overall than men in this sector. This is also confirmed by previous research, as women show greater difficulty in balancing personal and professional life. Research that contradicts this is that of Theofilou, et al. [13] which was carried out in hospitals of Athens and specifically in nurses of the emergency department. There the researchers found that men experienced more mental fatigue than women, while there was no difference in general fatigue. In addition, in the research here, no differentiation was seen between the levels of fatigue, social support and quality of life depending on the parameters educational level, years of service, job position, age, etc. On the other hand, the research by Theofilou, et al. [13] showed that social support both overall and from the family is greater at a higher educational level. Similarly, Theofilou, et al. [13] showed a difference between nurses and nursing assistants and university level, where the assistants showed more fatigue.

Regarding limitations of the study, the sample size is restricted. Further research is needed. Specifically, qualitative research could be conducted via interviews or focus groups in which the experiences of nurses and doctors working in artificial kidney units will be explored. In addition, causal factors could be identified that differentiate working conditions in the public and private sector and may play a role in perceived fatigue and quality of life. Finally, a comparative study could be carried out between different countries.

Tailored programmes may be implemented for health professionals working in kidney units so as to address with mental health issues leading to more work productivity. This element is too important, particularly in periods of pandemics, like COVID-19.

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