

## Original Article

## Assessing the Health-Related Quality of Life of Nurses in the Public Sector of Cyprus

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### Abstract

**Background:** The health-related quality of life (HRQoL) encompasses the general health, functional ability, physical symptoms and emotional, cognitive, social and sexual functions of an individual. Although the HRQoL has been extensively studied in both patients and the general population, there is a limited number of studies of the HRQoL in the nursing profession.

**Aims:** This paper aimed to investigate the HRQoL of nurses working in the public hospitals of Cyprus and the factors affecting it.

**Methodology:** This was a cross-sectional study conducted from April 2016 through May 2016. To fulfil the needs of this study, a representative sample of nurses from seven public hospitals in Cyprus was used. The nurses were asked to respond to the Medical Outcomes Study Short Form-12 (SF-12), and their demographic and work characteristics were collected. The statistical processing was done with IBM SPSS Statistics for Windows, Version 20.0.

**Results:** The nurses scored averages of 49.96 on the Physical Health Composite Scale (PCS) and 50.00 on the Mental Health Composite Scale (MCS). The lowest score was seen in the dimension of vitality, with an average of 57.22, and the highest score was in the body function dimension, with an average of 80.81. The scoring for the above scales ranged from 0–100. Overall, the males showed better physical health ( $p=0.035$ ) and mental health ( $p=0.023$ ) than the females. Moreover, a positive relationship was found between the physical and mental health ( $p=0.000$ ).

**Conclusions:** The PCS and MCS scores of the nurses fell in the middle of the scale, which is expected to happen in the general population. Studying the HRQoL in nurses is particularly important, since it can lead to the development of a policy for improving the working conditions in nursing homes.

**Keywords:** nurses, health-related quality of life, SF-12

### Background

The quality of life is defined by the World Health Organization (WHO) as the “individual perceptions of people about their place in life in the light of the cultural context in which they live, and in relation to goals, expectations, models and their interests”. The quality of life combines the physical health, psychological

status, level of independence, social relationships and personal beliefs, as well as the relationships of individuals with basic environmental characteristics that depend mainly on their cultural, social and natural environment [WHO Quality of Life (WHOQOL) Group, 1998].

The health-related quality of life (HRQoL) was created in the medical sciences, focusing mainly

on the assessment of physical and psychological health and social well-being (Mooney, 2006). Using the above concept, the effects of illness, physical health and human health can be described (Miguel et al., 2008; Mooney, 2006). However, there is no specific definition of the HRQoL that has been accepted by all researchers. In its broadest sense, it is characterized as a quality of life area focusing mainly on health assessment (Chen et al., 2005; Garratt et al., 2002; Miguel et al., 2008). Therefore, the HRQoL is not a specific concept, which makes it difficult to determine what it constitutes. In general, the quality of life in relation to health includes the general health, functional ability, physical symptoms and emotional, cognitive, social and sexual functioning of the individual (Yfantopoulos, 2001a; Yfantopoulos, 2001b).

The literature highlights the importance of a nurse's good health because of its direct impact on the care of patients (Leary & Francis, 2007; Wu et al., 2011; Wilkins & Shields, 2008; Arimura et al., 2010). A poor health status in nurses leads to reduced quality and safety in care (Leary & Francis, 2007; Wu et al., 2011; Oyama & Fukahori, 2015b). In other studies, the association between ill health and errors in patient medication has been reported (Wilkins & Shields, 2008; Oyama & Fukahori, 2015b). According to the Oyama and Fukahori review (2015b), an HRQoL assessment of nurses can lead to drafting a policy to create a healthy working environment.

Although the HRQoL has been extensively studied in the general population and in patients with various diseases, there is a limited number of studies involving specific occupational categories, such as nurses. Moreover, the investigation of the HRQoL of nurses in Cyprus is negligible; therefore, this study is particularly interesting, since it will assess the nurses' health level and cover part of this research gap. The goal of this study was to evaluate the HRQoL of the public sector nurses in Cyprus, and to investigate the factors that affect it.

## Methodology

### Data Sampling

A representative sample of nursing personnel from hospitals in Nicosia, Larnaca, Limassol, Famagusta, Kyperounta and Paphos and the Archbishop Makarios III Hospital in Nicosia was

used for this research. In total, 585 nurses participated in the survey. The sample size was determined according to the desired level of accuracy for the results, the financial costs and the time available. The criteria for entering the survey were as follows: nursing staff (nurses, senior nurses and first nurses) working in any part of the hospital in inpatient care. Daycare centres were excluded from this research.

### Research Tool

The first part of the questionnaire contained the sociodemographic information for the sample and the characteristics of the work. To measure the overall health of the nurses, the Medical Outcomes Study Short Form-12 (SF-12v2, license number: QM032772) was used, which was designed as a shorter alternative to the SF-36 (Ware, Kosinski & Keller, 1995). The SF-12 questionnaire calculates the four dimensions of the SF-36 using two elements (physical function, physical role, emotional role and mental health) and the other four using one element (physical pain, general health, vitality and social functionality). The HRQoL subscales are measured on a scale of 0–100. In the SF-12 health survey, a tentative score of 100 shows better health in the dimension being studied. The SF-12 was weighted in the Greek population by Kondimopoulos and associates in 2007 using 1,005 participants and obtaining the data in a personal interview. The cross-sectional validity was very high. In particular,  $r=0.97$  ( $p<0.01$ ) in the physical elements between the SF-36 and SF-12, and  $r=0.93$  ( $p<0.01$ ) in the cognitive elements between the SF-36 and SF-12.

### Data Collection and Data Analysis

This research consisted of a cross-sectional study that aimed to investigate the HRQoL of the nursing staff in public nursing homes in Cyprus. The main survey was conducted from April 2016 until May 2016, and the questionnaires were distributed to the various nursing homes and departments by the investigator himself, after consultation with the hospital administration. The questionnaire completion time did not exceed 10 minutes. For the personnel in each department, the researcher explained the purpose of the research and the benefits that would come from their participation. The beginning of the questionnaire contained the details of the purpose and benefits of the survey, as well as the full contact information for the researcher.

The sociodemographic data was analysed using descriptive statistics. The scoring of the SF-12 scale was based on the User's Manual for the SF-12v2 Health Survey (3<sup>rd</sup> ed.) (Maruish, 2012). The correlation between the HRQoL and the demographic characteristics was done using the t-test and one way analysis of variance (ANOVA). The correlation of the physical and mental health was done using the Pearson correlation coefficient (*r*). The statistical data was processed using IBM SPSS Statistics for Windows, Version 20.0 (IBM Corp., Armonk, NY, USA).

### Ethics

In the preparation of this paper, approval was requested and secured from the Commissioner of Personal Data Protection (No. 3.28.388), the Cyprus National Bioethics Committee (No. 2015.01.114) and the Research Promotion Committee of the Ministry of Health of Cyprus (No. 5.34.01.7.6). The participation of the subjects in this research was entirely voluntary, and through the completion of the questionnaire, the participants were asked to provide their written consent. The participants were informed in writing about the purpose of the study, and they were asked not to fill in any of personal identification data, since the answers were to be completely anonymous. The results were used solely for the purposes of this research and solely by the research team. All the data collected was stored by the researcher with absolute confidentiality and security.

### Results

In the present study, the SF-12 internal consistency credibility was found to be very good ( $\alpha=0.82$ ). The sample (*n*) size was 585 individuals, and the demographics are described in Table 1. The sample consisted of 526 nursing staff (89.9%), 43 higher nursing officers (7.4%) and 16 first nursing officers (2.7%). The nurses came from 7 public nursing homes in Cyprus: 203 from Nicosia General Hospital (34.7%), 131 from Limassol General Hospital (22.4%), 64 from Larnaca General Hospital (10.9%), 50 from Famagusta General Hospital (8.5%), 21 from the Kyperounta Regional Hospital (3.6%), 46 from the General Hospital of Paphos (7.9%) and 70 from the Archbishop Makarios III Hospital (12.0%).

Table 2 presents a description of the 12 questions from the SF-12 and their response rates. A large

percentage (72%) of nurses believed that their overall health status was good to excellent, while one in five rated it from moderate to poor. In terms of physical function, four out of five nurses said they were not limited to day-to-day activities. When asked if they were affected when climbing stairs, more than half of the nurses responded that they were not affected at all, with one in three responding that they were a little affected. In their physical roles, three out of four nurses reported that they did not realize less than what they wanted, but did not limit the kind of work they had to do. In terms of physical pain, 70% stated that they were not affected by pain (little or nothing). For the activities that fell under the emotional element, it seemed that one out of three nurses did less than they could. One in four nurses reported that they have done less in their jobs or other activities than usual. Two out of five nurses reported feeling tranquil and serene sometimes to rarely, while feeling despair and melancholy often to constantly.

Vitality was reflected in the statement, "You've had a lot of energy", and three out of four nurses felt constantly energetic and active. The summary of vitality had the lowest score, which was exactly at the median of the measurement scale. Regarding the social role in the HRQoL, half of the nurses responded that their social activity was not influenced or affected for a short period of time. Only one in ten nurses responded that their social activities were affected for a long time or continually.

Table 3 shows the average values obtained by the nursing staff in the eight dimensions of the SF-12 (general health, physical functionality, physical role, emotional role, vitality, mental health, physical pain and social role), as well as the highest (mean=80.81, SD=25.305, median=100.00) and lowest scores in the dimension of vitality (mean=57.22, SD=25.338, median=50.00). Both categories of the SF-12 scale, physical health and mental health, are also presented. Ware, Kosinski and Keller (1995) confirmed the validation of the questionnaire created by Kontodimopoulos et al. (2007) in Greek. According to the results of the survey, the mean value of the physical and mental health scales varied at the middle of the scale, as was expected from the general population (Kontodimopoulos et al., 2007). The Physical Health Composite Scale (PCS) showed a mean of 49.96 and the Mental Health Composite Scale (MCS) showed a mean of 50.00.

**Table 1: Demographic and work-related characteristics.**

		<b>Sample number (n)</b>	<b>Percentage (%)</b>	<b>Mean</b>	<b>SD</b>
<b>Sex</b>	Male	152	26.0		
	Female	433	74.0		
<b>Age</b>	≤35	420	71.8	33.79	8.133
	36–50	131	22.4		
	51+	34	5.8		
<b>Level of education</b>	University degree	420	71.8		
	Postgraduate degree	157	26.8		
	Doctoral title	8	1.4		
<b>Job position</b>	Nursing officer	526	89.9		
	Senior nursing officer	43	7.4		
	First nursing officer	16	2.7		
<b>Work history in years</b>	≤6	218	37.3	10.67	7.938
	7–11	191	32.6		
	12+	176	30.1		

**Table 2: SF-12 item and summary descriptive statistics (N = 585).**

	Mean	SD	Median	95% CI		Response frequencies (%)					
						1	2	3	4	5	6
**Health rating in general (GH)*	3.87	0.85	4.00	3.83	3.90	1.0	5.1	21.7	50.4	21.7	-
Limited in moderate activities (PF)*	2.77	0.49	3.00	2.75	2.79	3.1	16.6	83.3	-	-	-
Limited in climbing several flights of stairs (PF)*	2.46	0.65	3.00	2.43	2.49	8.9	36.2	54.9	-	-	-
Accomplished less due to physical health (RP)*	1.66	0.47	2.00	1.64	1.68	34.0	36.0	-	-	-	-
Limited in the kind of work due to physical health (RP)*	1.68	0.47	2.00	1.66	1.70	32.1	67.9	-	-	-	-
Accomplished less due to emotional problems (RE)*	1.63	0.48	2.00	1.61	1.65	36.8	63.2	-	-	-	-
Not as careful due to emotional problems (RE)*	1.74	0.44	2.00	1.72	1.76	26.2	73.8	-	-	-	-
**Interference of pain (BP)*	3.77	1.08	4.00	3.72	3.81	3.1	9.2	26.8	29.7	31.1	-
**Felt calm and peaceful (MH)*	2.97	1.04	3.00	2.92	3.01	0.9	9.7	21.7	34.2	29.1	4.4
**Had a lot of energy (VT)*	3.29	1.01	3.00	3.25	3.33	1.2	3.4	18.6	34.4	30.8	11.6
Felt down (MH)*	4.35	1.14	4.00	4.30	4.40	1.4	5.5	14.2	29.6	34.4	15.0
Interference with social activities due to physical or emotional health (SF)*	3.80	1.10	4.00	3.75	3.84	3.1	8.4	28.5	25.6	34.4	-

\*PF: physical functioning, RP: role physical, BP: bodily pain, GH: general health, VT: energy/ fatigue, SF: social functioning, RE: role emotional, MH: mental health

\*\*Item recoded so that higher scores corresponded to better health.

**Table 3: Summary of the eight dimensions of the SF-12, Physical Health Composite Scale (PCS) and Mental Health Composite Scale (MCS).**

	Mean	SD	Median
Physical functioning	80.81	25.305	100.00
Role physical	66.92	42.953	100.00
Bodily pain	69.14	27.073	75.00
General health	71.66	21.140	75.00
Vitality	57.22	25.338	50.00
Social functioning	69.95	27.413	75.00
Role emotional	68.54	40.465	100.00
Mental health	65.91	21.577	62.50
PCS-12	49.96	7.139	51.25
MCS-12	50.00	7.910	50.48

**Table 4: Correlation between Physical Health Composite Scale (PCS) and Mental Health Composite Scale (MCS) dimensions [Pearson (r), p value\*].**

		PCS	MCS
PCS	r	1	.634*
	p		.000
	n	585	585
MCS	r	.634*	1
	p	.000	
	n	585	585

\*The level of statistical significance was 0.01.

Regarding the relationship between the HRQoL and demographic and work characteristics, a statistically significant difference was found between the gender and the PCS and MCS. Specifically, men appeared to have better results (mean=50.99, SD=7.234, p=0.030) than the women (mean=49.57, SD=7.234, p=0.035) in the MCS, with a mean of 51.26 (SD=7.710, p=0.21), versus the women who showed a mean of 49.56 (SD=7.949, p=0.023). There were no significant relationships with the age, job, years of service and educational level.

A statistically significant relationship was found between the physical and mental health, in which a moderate positive linear relationship ( $r=0.634$ ,  $p=0.000$ ) seemed to be associated. Increasing physical health showed increasing mental health. The results are shown in Table 4.

### Discussion

One of the objectives of the present study was to assess the HRQoL of the nurses in the public sector of Cyprus and its relationship to the sociodemographic and labour characteristics.

Based on the findings, the nurses showed modest overall health. The corresponding summary indicator ranged from the median of the measurement scale. Similar results were found by Ioannou et al. (2015) and Kontodimopoulos et al. (2007), while Oyama et al. (2015a) found worse results.

With all the parameters falling above the median value of the scale, the health of the nurses seemed to be moderate to relatively good. These results are expected if the study is conducted in a relatively healthy working population (Sullivan et al., 1995). Similar results were found in the study by Ioannou et al. (2015), with the vitality scale showing the lowest score and physical function the highest. In the study by Silva et al. (2010), the vitality, mental health and physical pain showed the lowest scores. However, Tountas et al. (2003) found that the nurses had worse HRQoL than the doctors and technical staff in all eight dimensions. Shen et al. (2005) found lower scores in the mental health dimension in the nurses due to anxiety.

A statistically significant relationship was found between physical and mental health, in which a moderately positive linear relationship appeared to be associated. An increase in the physical health seemed to increase the mental health. This was confirmed by the Triantafyllou study (2010).

According to the results of this research, there appeared to be a statistically significant relationship between gender and the PCS and MCS. The males appeared to perform better in both the physical and mental health dimensions than the females. These results are supported by the research conducted by Guler and Kuzu (2009) and Ioannou et al. (2015).

With regard to the effect of age on the HRQoL, this work did not detect a statistically significant relationship. These findings are reinforced by the studies by Augousto et al. (2008) and Ioannou et al. (2015). However, Lampert et al. (2007a, 2007b) and Chang et al. (2007) reported that the age affected the HRQoL; in particular, an increased age was associated with worse physical health and better mental health.

The educational level did not appear to affect the HRQoL in this study. This finding was supported by the findings of Ioannou et al. (2015), Oyama et al. (2015a) and Shiao et al. (2010). However, Ioannou et al. (2015) argued that nurses who

continue to receive training and attend seminars showed a better HRQoL.

The HRQoL was not affected by either the position of the nurse or the years of service in this study group. Similar results were found in the studies by Ioannou et al. (2015) and Augousto et al. (2008). In the studies by Lambert et al. (2007a, 2007b), the years of service showed a negative correlation with the physical health and positive correlation with the mental health.

## Conclusions

According to the results of this research, the health of the nurses seemed to be moderate to relatively good. A statistically significant relationship was found between the physical and mental health, in which a moderately positive linear relationship appeared to be associated. An increase in physical health translated to an increase in mental health. In addition, with regard to HRQoL, the males appeared to show better results in both their physical and mental health than the females.

Further studies of the HRQoL would be of great importance, since they could lead to the development of policies to improve working conditions in hospitals (Oyama & Fukahori, 2015b). This includes supplying nursing homes with equipment that will make work easier and less dangerous for the healthcare professionals, encouraging them to adopt good health behaviour to reduce the risk of developing disease. This effort may include information leaflets, lectures and the implementation of preventive medicine programs for nursing staff free of charge, which could identify early risk groups. Still, the creation of a group of psychologists, healthcare professionals and social workers who the nurses could contact is key to the undertaking (Liakou, 2009).

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