Preoperative care dependency and postoperative quality of recovery of the surgical patients

Dependência de cuidados pré-operatórios e qualidade de recuperação pós-operatória de pacientes cirúrgicos

Dependencia de cuidados preoperatorios y calidad de recuperación posoperatoria de pacientes quirúrgicos

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Abstract

Objective: The purpose of the study was to determine the relationship between preoperative care dependency and postoperative quality of recovery in patients undergoing surgery.

Methods: The sample of the descriptive, cross-sectional and correlational study consisted of 215 patients. A Patient Information Form, the Care Dependency Scale and the Recovery Quality-40 Scale were applied to the patients through face-to-face interview technique in order to collect the data between June and December 2018. This study adhered to Strengthening the Reporting of Observational Studies in Epidemiology guidelines.

Results: There was a statistically significant difference between Care Dependency Scale and the Recovery Quality-40 Scale mean scores of the patients and their physical comfort, physical independence, and pain in terms of age groups and genders ($p<.05$). A positive and moderate correlation was found between the patients' care dependency and physical independence.

Conclusion: It was observed that when the care dependency level decreased, the patients needed less assistance throughout the postoperative recovery period, as they were able to carry out their daily activities independently.

Resumo

Objetivo: O objetivo do estudo foi determinar a relação entre a dependência de cuidados pré-operatórios e a qualidade de recuperação no pós-operatório de pacientes submetidos à cirurgia.

Métodos: A amostra do estudo descritivo, transversal e correlacional foi composta por 215 pacientes. Um formulário de informações do paciente, a *Care Dependency Scale* e o questionário *Quality of Recovery-40 item* foram aplicados aos pacientes usando a técnica de entrevista face a face para a coleta de dados entre junho e dezembro de 2018. A ferramenta *Strengthening the Reporting of Observational Studies in Epidemiology* foi utilizada neste estudo.

Resultados: Houve uma diferença estatisticamente significativa entre as pontuações médias da *Care Dependency Scale* e do *Quality of Recovery-40 item* Scale dos pacientes e seus domínios conforto físico, independência física e dor em termos de faixas etárias e sexo ($p<0,05$). Foi encontrada uma correlação positiva e moderada entre a dependência de cuidados dos pacientes e a independência física.

Conclusão: Quando o nível de dependência de cuidados diminuiu, os pacientes precisaram de menos assistência durante a recuperação no período pós-operatório, pois conseguiram realizar suas atividades diárias de forma independente.

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Conflicts to interest: none to declare.

Resumen

Objetivo: El objetivo del estudio fue determinar la relación entre la dependencia de cuidados preoperatorios y calidad de recuperación en el posoperatorio de pacientes sometidos a cirugía.

Métodos: La muestra del estudio descriptivo, transversal y correlacional estuvo compuesta por 215 pacientes. Se aplicó a los pacientes un formulario de información del paciente, la *Care Dependency Scale* y el cuestionario *Quality of Recovery-40 item*, mediante la técnica de entrevista cara a cara para la recopilación de datos, entre junio y diciembre de 2018. Se utilizó la herramienta *Strengthening the Reporting of Observational Studies in Epidemiology* en este estudio.

Resultados: Hubo una diferencia estadísticamente significativa entre el puntaje promedio de la *Care Dependency Scale* y del *Quality of Recovery-40 item* Scale de los pacientes y los dominios bienestar físico, independencia física y dolor en términos de grupos de edad y sexo ($p<0,05$). Se observó una correlación positiva y moderada entre la dependencia de cuidados de los pacientes y la independencia física.

Conclusión: Cuando el nivel de dependencia de cuidados disminuyó, los pacientes necesitaron menos atención durante la recuperación en el período posoperatorio, ya que pudieron realizar sus actividades diarias de forma independiente.

Introduction

Surgical procedures affect whole body of the patient and cause many physiological and psychological changes and complications such as impaired homeostatic balance, fear, infection susceptibility, and pain.[1,2] Postoperative complications are considerably an indicator of a medical condition. It is estimated that 3-12 million patients die as a result of postoperative complications each year.[3]

Depending on the dependency level before and after surgery, the patient with care dependency (CD) need professional care support to some extent, upon increased degree of self-care requirement.[4] Planning nursing care appropriate for the CD level in the preoperative period prevents development of postoperative complications and ensures recovery of the patients and their return to their daily life within the shortest time.[5]

The quality of recovery (QoR) is a essential metric for assessing a patient's medical condition in the early postoperative period.[6,7] Many factors including pain, emotional state, stress response, to prevent postoperative complications, duration of hospitalisation, recovery time and postoperative complications, as well as socio-economic situation, educational level, surgical history and co-morbid disease affect the postoperative QoR.[8,9]

The studies state that patients with CD as indicated by physical and mental well-being, and fulfilling activities of daily living with difficulty in the preoperative period have a high mortality and morbidity rate and a significant risk of complications in the postoperative period.[10,11]

The literature emphasises the importance of identifying CD during the preoperative period and its impact on the quality of nursing care. It was noted that it was mostly investigated in groups of internal diseases.[12–15] The studies have revealed that the QoR-40 is a high-quality measure that is highly sensitive to patient outcomes and ensures a comprehensive and acceptable assessment of postoperative quality of recovey.[6–8,16,17]

This study was conducted to investigate the relationship between the level of preoperative CD and postoperative QoR in patients undergoing surgery. This study sought answers to the following questions:

1. What is the CD level of the patients before surgery?
2. What is the QoR level of the patients after surgery?
3. Is there a correlation between CD and QoR of the patients?

Methods

The population of this descriptive and cross-sectional study comprised of the patients who underwent emergency and planned surgeries between June and December 2018 in the general surgery clinic of a state hospital in Nicosia, Northern Cyprus. The sample size was calculated using G*Power 3.1.9.2 software for 95% ($1-\beta=0.05$) power at the $\alpha=0.05$ level, assuming a low effect size ($r=0,30$) for the correlation between CD and QoR-40 scores. The minimum sample size was 115. Data were collected in the preoperative period from 238 patients included

in the study, 23 of them declared that they wanted to leave the study in the postoperative period. Therefore, the data of 215 patients were analyzed. The sample of the study included patients who had open surgeries, were 18 years and older, conscious, able to communicate, had no physical dependency, non-smoking, non or minimal alcohol use, not admitted to the intensive care unit postoperatively, no serious respiratory and cardiovascular disease, no history of psychiatric disease and psychotropic drug use, and were voluntary to participate in the study during the data collection period. Patients who did not want to continue the study in postoperative period were excluded from the study. The data were collected by employing a Patient Information Form, the Care Dependency Scale (CDS), and the Quality of Recovery-40 Scale (QoR-40). The Patient Information Form, which was prepared by the researchers according to the literature, had 11 questions about the participants' descriptive characteristics, such as age, gender, educational status, types of surgery, chronic disease, and previously experienced surgery.[5,12,14]

The CDS is a scale that was developed based on Virginia Henderson's human needs and is utilized to evaluate a patient's CD comprehensively from both physical and psychological standpoints.[18] Hakverdioğlu Yönt et al., conducted the Turkish validity and reliability study of the CDS in 2010.[19] The CDS consists of a total 17 items that include activities of daily living. The lowest and highest scores of the scale are 17 and 85. A high score indicates that the patient is independent in meeting their own care requirements, while a low score suggests that they depend on others. The Cronbach's α coefficient of the scale was found to be 0.91. The Cronbach's α coefficient of the scale, on the other hand, was determined to be 0.90 in this study.

The QoR-40 was developed to assess the quality of recovery after surgery by Myles et al.[17] The Turkish validity and reliability study of the scale was conducted by Karaman et al.[7] The QoR-40 is a 40-item questionnaire that measures QoR after surgery during the first 24 hours. The questionnaire includes a total of 40 items and 5 subscales that question the quality of life after surgery; physical comfort (12 questions), emotional state (9 questions), pain (7 questions), psychological support (7 questions), and physical independence (5 questions). The lowest and highest scores of the scale are 40 and 200. A high score signifies that quality of recovery after surgery is high. The Cronbach's alpha coefficient of the scale was found to be 0.93.[7] The Cronbach's α coefficient of this study, on the other hand, was determined to be 0.92. This study was conducted in accordance with the Declaration of Helsinki**.** Ethical approval from ethics committee of a university, permission from a state hospital, and informed consent from the voluntary patients were obtained to conduct the study. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guideline was followed to report this study.

The patients were informed about the study and their informed consent was acquired before the data collection. The researcher gathered data through face-to-face interviews. The patient information form and CDS were applied in the evening before the surgery and the QoR-40 was applied 24 hours after the surgery to the patients in the hospital. Data collection in this study is based on self-report method, which may be associated with response bias. To reduce the possibility of this bias, patients were informed that all data will be collected anonymously without identification and that the data will not be associated with their treatment and care, particularly. SPSS (Statistical Package for Social Sciences) 25.0 (SPSS Inc., Chicago, IL, USA) software was employed to analyse and evaluate the data. Missing data were excluded from the study. The data were described using number, percentage, mean, and standard deviation. Frequency analysis was conducted to identify the distribution of patients according to their descriptive characteristics, chronic diseases, previous surgeries, and how they arrived at the hospital (as emergency surgery or for a planned surgery). The Kolmogorov-Smirnov Test was utilized to examine whether the patients' CDS and QoR-40 scores conformed to the normal distribution, which appeared to fail. Therefore, non-parametric hypothesis testing procedures such as the Mann-Whitney U Test and the Kruskal-Wallis H Test were utilised. Since the independent variable

was divided into two categories, the Mann-Whitney U Test was employed to compare the patients' scale scores in terms of gender, chronic disease status, type of hospitalisation, and previous surgery. The Kruskal-Wallis H Test was employed to compare scale scores of patients in terms of age group, education level, types of surgery, and duration of anaesthesia since the independent variable included more than two categories. The Spearman's Correlation Test was utilised to determine the correlation between the patients' CDS and QoR-40 scores. The results were assessed at a significance level of $p<.05$ and confidence interval of 95%.

Ethical approval from Health Sciences Ethics Committee of Near East University (YDU/2018/57-569), and permission from Dr. Burhan Nalbantoğlu State Hospital (YTK.1.01).

Results

It was determined that 36.28% of the patients in the study were between the ages of 31 and 50, 53.49% were male. The patients who underwent hernioplasty were 42.33%, underwent cholecystectomy were 31.63%, underwent appendectomy were 16.74% and underwent other surgeries were 9.30%. (Table 1).

In the present study, it was found that The CDS mean score of the patients was 82.61±6.58 points, with the lowest score of 30 and the highest score of 85. The mean scores of the patients for QoR-40 subscales were 27.94±4.80 for the subscale of physical comfort, 21.92±3.58 for the subscale of emotional state, 19.99±2.27 for the subscale of physical independence, 31.49±2.58 for the subscale of psychological support, and 10.54±4.13 for the subscale of pain. QoR-40 total score of the patients ranged from 93 to 154, and their QoR-40 total mean score was 111.58±8.34 (Table 2).

The difference in CDS scores between patients in terms of age group, gender, level of education, duration of anaesthesia, and previously experienced surgery was shown to be statistically significant ($p<0.05$) (Table 1). There was a statistically significant difference between patients' the overall QoR-40 score and the physical independence subscale in terms of age groups, between their overall scale score and scores of the physical comfort and pain subscales in terms of gender, between their scores of the emotional state and physical independence subscales in terms of their education level, between their scores of the overall scale and the emotional state, physical independence, psychological support and pain subscales in terms of the surgery type, between their scores of the pain subscale based on the duration of anaesthesia, and between scores of the overall scale and the physical comfort and pain subscales in terms of their previously experienced surgeries ($p<0.05$) (Table 1).

There was a statically significant, positive and moderate correlation between CDS scores and QoR-40 physical independence subscale scores of the patients (Table 3).

Discussion

The patient's inability to accomplish activities of daily living increases the need for individual care and CD.[20] The evaluation of the patient's CD level is essential for identifying care needs, planning care management, enhancing the quality of care and decrease mortality and morbidity.[12]

The chronic, progressive, and long-term symptoms of patients' disease, changes in the patients' consciousness level, and the need for treatment and care all produce an elevation in CD levels of patients receiving treatment in internal clinics compared to surgical patients.[12,20] The fact that the CDS mean score of the patients included in this study was close to the maximum score of the scale indicated that the patients' CD levels were low. It is believed that low CD levels were associated with a low prevalence of chronic diseases, lack of physical dependence, and types of surgery.

Functional status diminishing and chronic diseases increasing with increasing age affect patients' CD level.[20] The related studies have reported that CD rises with increasing age.[12,18,21,22] A high negative correlation was determined between age and CD level in a study conducted on patients undergoing

Table 1. Distribution of the descriptive characteristics, CDS and QoR-40 scores of patients'

Descriptive characteristics	n(%)	CDS x̄±SD	Physical comfort x̄±SD	Emotional state x̄±SD	Physical independence x̄±SD	Pyschological support x̄±SD	Pain x̄±SD	Global QoR-40 x̄±SD
Gender								
Male	115(53.49)	83.49 ± 5,57	27.22 ± 3.71	21.91 ± 3.25	20.06 ± 2.26	30.99 ± 3.15	9.82 ± 3.85	110 ± 6.54
Female	100(46.51)	81.60 ± 7,47	28.77 ± 5.72	21.93 ± 3.94	19.91 ± 2.29	32.06 ± 1.52	11.38 ± 4.29	114.05 ± 9.61
Z ; p		-2.317 ; 0,021*	-2.061 ; 0.039*	-0.086 ; 0.932	-1.116 ; 0.264	-2.622 ; 0.009	-3.726 ; 0.000*	-3.570 ; 0.000*
Ages (years)								
30 years ≥	47(21.86)	84.47 ± 1.25	28.02 ± 3.74	21.91 ± 3.29	20.23 ± 2.11	31.28 ± 4.30	9.96 ± 2.69	111.40 ± 7.42
31-50 years	78(36.28)	83.45 ± 5.6	27.69 ± 4.50	21.38 ± 2.29	20.47 ± 1.81	31.65 ± 1.77	10.38 ± 3.05	111.59 ± 6.59
51-70 years	59(27.44)	82.58 ± 5.43	27.92 ± 5.68	22.32 ± 5.01	20.02 ± 1.81	31.42 ± 1.57	10.53 ± 5.00	112.20 ± 9.61
71 years ≤	31(14.42)	77.74 ± 11.7	28.48 ± 5.33	22.52 ± 3.38	18.35 ± 3.42	31.52 ± 2.47	11.87 ± 5.97	112.74 ± 10.96
χ^2 ; p		22.352 ; 0.000*	1.883 ; 0.597	7.259 ; 0.064	22.22 ; 0.000*	3.468 ; 0.325	2.266 ; 0.519	0.418 ; 0.937
Difference		1-4, 2-4, 3-4			1-4, 2-4, 3-4			
Education level								
Primary school	60(27.91)	79.98 ± 8.79	28.52 ± 4.98	22,65 ± 3,85	19.30 ± 2.87	31.73 ± 1.86	10.78 ± 4.76	112.98 ± 10.30
Secondary school	31(14.42)	83.19 ± 2.87	26.84 ± 4.02	21,65 ± 2,21	19.87 ± 2.55	31.71 ± 1.62	10.35 ± 2.70	110.42 ± 5.46
High school	71(33.02)	83.31 ± 7.21	28.10 ± 4.43	21,54 ± 3,57	20.46 ± 1.51	31.32 ± 3.50	10.58 ± 4.38	112.00 ± 6.97
Baccalaruate	53(24.65)	84.30 ± 1.95	27.72 ± 5.47	21,77 ± 3,88	20.21 ± 2.02	31.30 ± 2.30	10.34 ± 3.78	111.34 ± 8.97
χ^2 ; p		30.404 ; 0.000*	3.345 ; 0.341	8,798 ; 0,032*	13.881 ; 0.003*	1.149 ; 0.765	0.893 ; 0.827	2.042 ; 0.564
Difference		1-2, 1-3, 1-4		1-2, 1-3, 1-4	1-3, 1-4			
Types of surgery								
Hernioplasty	91(42.33)	83.62 ± 3.31	27.32 ± 4.55	21.8 ± 3.38	20.21 ± 1,99	31.14 ± 2.03	9.81 ± 4,19	110.29 ± 7.81
Cholecystectomy	68(31.63)	82.84 ± 4.37	28.16 ± 5.11	21.69 ± 3.5	19.93 ± 2,35	31.93 ± 2.26	11.97 ± 4.8	113.68 ± 8.43
Appendectomy	36(16.74)	83.83 ± 4.27	28.81 ± 4.12	21.72 ± 3.27	20.11 ± 2,16	31.25 ± 4.3	9.61 ± 1.95	111.50 ± 7.15
Others	20(9.30)	75.05 ± 16.32	28.45 ± 5.89	23.60 ± 4.90	19.00 ± 3,11	32.00 ± 1.26	10.70 ± 2.96	113.75 ± 11.05
χ^2 ; p		10.824 ; 0.013*	4.445 ; 0.217	9.039 ; 0.029*	10.946 ; 0.012*	11.929 ; 0.008*	20.714 ; 0.000*	8.521 ; 0.036*
Difference		1-4, 2-4, 3-4		1-4, 2-4, 3-4	1-4, 2-4, 3-4	1-4, 2-4, 3-4	1-4, 2-4, 3-4	1-4, 2-4, 3-4
Duration of anesthesia								
1 hour ≥	82(38.14)	83.20 ± 4.61	27.85 ± 4.23	21.38 ± 1.69	20.33 ± 1.88	31.66 ± 1.98	9.88 ± 3.34	111.10 ± 5.59
1.5-2 hours	65(30.23)	83.40 ± 4.55	27.68 ± 4.94	21.86 ± 3.62	20.18 ± 2.14	31.54 ± 1.98	10,54 ± 4.84	111.80 ± 8.78
3 hours ≤	68(31.63)	81.15 ± 9.46	28.29 ± 5.35	22.63 ± 4.91	19.40 ± 2.69	31.24 ± 3.55	11.35 ± 4.16	112.91 ± 10.44
χ^2 ; p		4.991 ; 0.082	1.456 ; 0.483	3.345 ; 0.188	14.348 ; 0.001	0.540 ; 0.763	7.133 ; 0.028*	0.298 ; 0.862
Difference							1-3	
Types of hospitalisation								
Emergency surgery	39(18.14)	83.36 ± 4.64	28.74 ± 4.02	21.82 ± 3.19	19.97 ± 2.15	31.33 ± 4.17	9.79 ± 2,24	111.67 ± 7.25
Planned surgery	176(81.86)	82.44 ± 6.93	27.76 ± 4.95	21.94 ± 3.67	19.99 ± 2.30	31.52 ± 2.08	10.71 ± 4,42	111.93 ± 8.58
Z ; p		-1.144 ; 0.252	-1.531 ; 0.126	-1.241 ; 0.215	-0.057 ; 0.954	-1.232 ; 0.218	-0.083 ; 0.934	-0.123 ; 0.902
Chronic disease status								
Yes	45(20.93)	80.00 ± 10.37	28.56 ± 6.32	23.07 ± 4.78	19.16 ± 3.17	30.87 ± 4.21	11.33 ± 4.36	112.98 ± 11.68
No	170(79.07)	83.30 ± 4.95	27.78 ± 4.33	21.62 ± 3.14	20.21 ± 1.91	31.65 ± 1.91	10.34 ± 4.05	111.59 ± 7.22
Z ; p		-1.857 ; 0.063	-0.212 ; 0.832	-1.914 ; 0.056	-2.514 ; 0.012*	-0.372 ; 0.710	-1.932 ; 0.053	-0.116 ; 0.907
Previously experienced surgery								
Yes	69(32.09)	80.62 ± 9.76	29.03 ± 5.71	22.33 ± 4.21	19.90 ± 2.17	31.61 ± 2.64	11.25 ± 4.7	114.12 ± 10.71
No	146(67.91)	83.55 ± 4.05	27.42 ± 4.23	21.73 ± 3.24	20.03 ± 2.32	31.43 ± 2.55	10.21 ± 3.8	110.83 ± 6.74
Z ; p		-2.789 ; 0.005*	-2.110 ; 0.035*	-1.433 ; 0.152	-1.027 ; 0.305	-0.885 ; 0.376	-2.039 ; 0.041*	-2.018 ; 0.044*

n - Number; % - Percentage; x̄, mean; SD - Standart Deviation; Z - Mann-Whitney U Test; χ^2 ,Kruskal Wallis Test;
*p<.05

surgery. It is underlined that age is a variable affecting CD.[22] However, no significant difference between age and CDS scores was discovered in studies conducted in Turkey, Cyprus and Holland.[13,14,20] The results of the present study are not compatible with the literature in terms of age. The fact that almost half of the patients in the study were 50 years or older was believed to have increased the CDS mean score and decreased the CD level.

Table 2. CDS and QoR-40 subscales scores averages of the patients'

Scales	n	x̄	SD	Min	Max
CDS	215	82.61	6.58	30	85
QoR-40 dimensions					
Physical comfort	215	27.94	4.80	15	50
Emotional state	215	21.92	3.58	12	44
Physical independence	215	19.99	2.27	9	25
Pyschological support	215	31.49	2.58	7	35
Pain	215	10.54	4.13	7	32
Global QoR-40	215	111.88	8.34	93	154

n - Number; x̄, mean; SD, Standart Deviation; Min, Minimum; Max, Maximum

Table 3. The correlation between CDS and QoR-40 scores of the patients'

QoR-40 Dimensions		CDS
Physical comfort	s	0.048
	p	0.488
Emotional state	s	-0.094
	p	0.169
Physical independence	s	0.352
	p	0.000*
Pyschological support	s	0.002
	p	0.974
Pain	s	-0.110
	p	0.109
Global QoR-40	s	0.084
	p	0.222

s - Correlation coefficient; p - Significance; *p<.05

Male patients were found to have lower CD and QoR levels than female patients. The low QoR levels of male patients were associated with the physical comfort and pain subscales. The studies have reported no difference between the gender of the patients and CD levels.[12–14,20] A related study reported that patients, who were aged 43 years and younger and male, had a higher QoR than the other patients.[5] It is stated that pain after surgery has an adverse effect on the QoR of male patients and also they may awaken out of anaesthesia more easily.[23] The anxiety levels of female patients are known to be high during this period.[23,24] Women's high levels of anxiety make it easier for them to express their feelings onto others.[5] Women, therefore, were thought to have higher scores from the QoR-40 physical comfort and pain subscales, and have high quality of recovery.

In their study, Kılıç et al. determined that when patients' education level decreased, so did their CD level rate.[14] Li et al. reported that CD was associated with patients' age, gender, and educational level in their study conducted with patients aged 50 years and older who underwent surgery in China.[22] The study by Türk and Üstün indicated that patients who graduated from high school or university had a higher CDS mean score than those who graduated from primary school or were illiterate, and the difference between their educational levels was statistically significant.[15] According to the results of the present study, the higher education patients had, the higher their CDS scores were, and the lower their CD levels were. The findings of the present study are compatible with the literature. Patients with a higher education level are able to expand their knowledge and undertake self-care activities more.[14] Therefore, CD levels of the patients were believed to reduce.

Due to the fact that patients undergoing lower amount of anaesthesia are exposed to fewer anaesthetic agents, the harmful effects of endocrine and metabolic responses that develop during the operation are expected to be lower. The studies reported no correlation between the duration of anaesthesia and CD and QoR levels.[24,25] The results of the present study are compatible with the literature.

Patients with previously surgery experience exhibited lower CD and higher QoR levels than patients with no previously surgery experience. The difference in QoR levels was associated with the physical comfort and pain subscales. Being subjected to physically painful procedures, being away from family, fear of losing their job, being in a foreign environment, and meeting unfamiliar instruments or procedures may all induce fear and anxiety in the hospitalised people, resulting in pain.[26,27] It is known that the postoperative pain and anxiety lead the recovery time of the surgery patient to prolong.[6] The studies have stated that the preoperative training alleviates anxiety and pain of the patient.[28,29] Individuals who have already undergone surgery are believed to have low levels of anxiety due to their acquaintance with the circumstances they would experience. It can be considered that the patients' low scores on the pain subscale in the present study were caused by the ineffectiveness of pain management.

The QoR-40 mean score is stated to be in the range of 159-170 points in a quantitative systematic evaluation.[16] In a study conducted in a state hospital located in Western Turkey, the QoR-40 overall mean score was reported to be 158.45±20.39,[5] whereas in another study, this value was 170.13±20.49.[30] It was observed that the QoR-40 total and subscale mean scores of the present study were lower than those found in other studies. The low QoR-40 mean score may be explained by the low number of patients who actively used body mechanics, can accomplish activities of

daily living, and had previously previously surgery experience depending on the number of young patients included in the study.

A statistically significant correlation was determined between patients' CDS scores and QoR-40 physical independence subscale scores. It was observed in the study that the patients whose independence was raised needed less support throughout the postoperative recovery period, as they were able to carry out their daily activities independently.

This study has several limitations. First of all, the study was conducted in a single centre, the results of the study cannot be generalized to all hospitalized surgical patients in Northern Cyprus. Secondly, patients admitted to the ICU postoperatively were excluded from the study (n=82). Therefore, the number of patients included in the study was limited.

Conclusion

The results of the present study revealed that the CDS mean scores for the surgical patients were high and their QoR-40 mean scores were moderate. There was a positive and moderate correlation between patients' CDS scores and their QoR-40 physical independence subscale scores. When their CD level dropped, the patients needed less support throughout the postoperative recovery period, as they were able to carry out their daily activities independently. A statistically significant correlation was discovered between the surgical patients' age, gender, level of education, type of surgery and history of previously surgery experience, and level of care dependence. It is believed that determining surgical patient's level of care dependence during the preoperative period would contribute to enhancing the postoperative quality of recovery. Accordingly, it is advised that post-operative care management of surgical patients with a high level of care dependence be planned before surgery and the number of nurses necessary to sustain the patient's care after the planning be identified and increased. The evaluation of CDS and QoR-40 scores allows for determining surgical patients need, planning the nursing process, and meeting the patients requirements. Therefore, it is believed that applying CDS and QoR-40 to patients will contribute to enhancing the quality of nursing care, planning the number of nurses necessary for care, and developing patients training programmes and alternative care techniques.

Collaborations

Süerdem B, Dikmen BT contributeds to the study conception and design, data collection, analysis and data interpretation, writing of the article, and approval of the final version to be published.

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