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## Impact of colleague solidarity on job satisfaction in nurses

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### Abstract

The quality of nursing care is closely related to colleague solidarity status and the job satisfaction level of nurses. The researchers conducted this study as a descriptive and cross-sectional study to determine the impact of colleague solidarity on job satisfaction in nurses. The researchers conducted the study with the participation of 318 nurses working in a university hospital and volunteering to take part in the study. In the study, the researchers collected data using a 21-question survey. The researchers used percentage calculation, ANOVA test, Kruskal-Wallis's test, Mann-Whitney U test, and t-test for data analysis. In the study, the researchers determined that the nurses had a high level of colleague solidarity and their overall job satisfaction was neutral. In line with the findings, the researchers recommended that in-service training programs that might increase the job satisfaction level of nurses be organized.

**Keywords:** Nursing, Job satisfaction, colleague solidarity.

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## **1. Introduction**

Nursing and care are two concepts that are closely related [1,2]. In the literature, nursing care is defined as everything done for an individual to develop or maintain his/her abilities, survive, and meet his/her needs at a minimum level [3, 4]. In other words, care is a process that is not only peculiar to nursing. It is a concept that is distinctive for nurses and is usually carried out by them. The main goal in nursing care is to know a sick individual via communication-based on mutual trust, determine his/her needs and enable him/her to meet his/her needs independently. It is of prime importance to maintain the care process in a qualified and effective way both for patients and nurses. The ability of nurses to offer quality care is closely related to having adequate knowledge and skills, integrating the sensual and ethical aspects of care with professional knowledge and skills, constantly developing the self professionally, and giving care in line with professional ethical principles and values [5, 8]. In addition, quality nursing care depends on professional experience, professional attitude, and professional sense of self in nurses, as well as colleague solidarity and a positive workplace environment [7-10].

It is possible to define colleague solidarity as mutual support of professional knowledge and skills between individuals doing the same job, as well as psychological, social, and emotional support between them [3]. Examples of colleague solidarity are guiding in a workplace environment with a kind and helpful approach, helping beginners with orientation, supporting colleagues who have a higher workload, taking on the task of colleagues who are unable to come to work due to health issues, and guiding them in solving and/or coping with professional issues [11]. Colleague solidarity contributes to the development of knowledge and skills in team members, an increase in collaboration, the development of a sense of commitment and belonging for the profession and organization in a positive direction, and an increase in the quality and efficiency of the service provided [12,13]. Additionally, the solidarity of individuals working in an organization increases the satisfaction of employees and those who receive service and it particularly affects job satisfaction in a positive direction [14].

Job satisfaction is also the level of meeting the physical, spiritual, and social needs of employees, as well as their needs related to work and work environment [15]. Job satisfaction is a positive factor enabling the individual to direct toward work and a significant factor in increasing service quality [16,17]. The literature suggests that the job satisfaction of nurses is affected by several individual and organizational factors such as age, gender, marital status, years of employment, uncertainties about professional roles and responsibilities, and relationships with colleagues [18-21].

For nurses to offer a quality healthcare service, they need to have a high level of colleague solidarity and job satisfaction. As long as nurses have solidarity with their colleagues and have a high level of job satisfaction, the quality of nursing care, and patient and employee satisfaction will increase.

### **1.1. Purpose of the Study**

The researchers planned the present study to determine the impact of colleague solidarity on job satisfaction in nurses. The study aimed to the following questions:

- What are the sociodemographic and clinical characteristics of nurses?
- How is the colleague solidarity level of nurses?
- How is the job satisfaction level of nurses?
- Is there a correlation between colleague solidarity and the job satisfaction of nurses?

## **2. Methods**

### **2.1. Participants**

The researchers planned the current study in a descriptive correlational design and conducted it with nurses working in a university hospital in the Central Black Sea Region, which is in the North of Turkey. The study used the improbable sampling method. In the study, the researchers calculated the sample number to represent the target population to be 260 nurses among a total of 800 nurses

working in the hospital where the study was carried out, with a 95% confidence interval and 5% error. Considering data loss, the researchers completed the data collection process when they reached 318 nurses. The study included nurses who were 18 years and above, were female or male, and agreed to take part.

## **2.2. Data Collection Tools**

In the study, the researchers collected the data via a survey form including 21 questions about the sociodemographic and professional characteristics of the nurses by using the Colleague Solidarity in Nurses Scale and the Minnesota Job Satisfaction Questionnaire. The researchers tested the survey form by conducting a pilot study in a group of ten people. The sample did not include the nurses who took part in the pilot study. The researchers informed the nurses within the scope of the study that they were completely free to take or not to take part in the study and the data to be collected from the study was to be used only within the scope of the study. The researchers received verbal informed consent from the nurses.

### **2.2.1. The Colleague Solidarity in Nurses Scale**

Developed by Çetinkaya Uslusoy and Ecevit Alpar [22], the Colleague Solidarity in Nurses Scale (CSNS) was a five-point Likert scale measuring the colleague solidarity level of nurses. The scale had three subscales “emotional solidarity”, “academic solidarity” and “negative thoughts about solidarity” and a total of 23 items. The lowest and highest scores obtainable from the scale were 23 and 115, respectively. An increase in the score obtained from the scale indicated an increase in the level of nurses to have solidarity with their colleagues. A study conducted by Çetinkaya Uslusoy and Ecevit Alpar found Cronbach’s Alpha reliability coefficient of the scale to be 0.72 [22]. The present study found Cronbach’s Alpha reliability coefficient of the scale to be 0.74.

### **2.2.2. The Minnesota Job Satisfaction Questionnaire**

Developed by Weiss et al., the Minnesota Job Satisfaction Questionnaire (MJSQ) was a five-point Likert scale measuring the job satisfaction of individuals [23]. Baycan (1985) conducted the Turkish validity and reliability study of the scale [24]. The MJSQ had three subscales overall satisfaction, internal satisfaction, and external satisfaction, and a total of 20 items. The lowest and highest scores obtainable from the scale were 20 and 100, respectively. A score below 25 points indicated a low level of job satisfaction. A score between 26 and 74 points indicated a normal level of job satisfaction. A score above 75 points indicated a high level of job satisfaction. A study conducted by Baycan found Cronbach’s Alpha reliability coefficient of the scale to be 0.77 [24]. The present study found Cronbach’s Alpha reliability coefficient of the scale to be 0.88.

## **2.3. Ethics and Data Collection**

The researchers collected the data by conducting face-to-face interviews with the nurses. The researchers informed the participant nurses about the study and then applied the survey form and scales to them. The researchers informed the nurses that they were completely free to take or not to take part in the study, their names would not be written on the survey form and the data to be collected from the study was to be used only within the scope of the study. It took nearly 15 minutes to collect the data.

## **2.4. Data Analysis**

The researchers conducted the statistical analysis of the data related to the participant nurses using the SPSS 21.0 package program in the computer environment. They examined the normality test of the quantitative data via the Kolmogorov-Smirnov test. The researchers used the t-test and ANOVA in the analysis of the normally distributed data. They used the Kruskal Wallis test and Mann-Whitney U test in the non-normal distribution data. The researchers presented the results as frequency,

percentage, median, minimum, and maximum. They examined the correlation between the scales and subscales via Spearman's correlation analysis. They set the significance level at  $p < 0.05$ .

### 3. Results

Table I demonstrated the distribution of sociodemographic and professional characteristics of the nurses who took part in the study. Of the nurses, 71.4% were female, 28.6% were male, 61.6% were married, 49.7% had undergraduate education and 91.5% had a nuclear family structure. Of the nurses, 95% worked as a service nurse, 52.8% had been working for one year to ten years, 82.1% had chosen the profession willingly, 70.4% liked the profession and 54.4% were satisfied with the service they worked in (Table I).

Characteristics		n	%
Age	18-25 years	66	20.8
	26-34 years	103	32.4
	35-42 years	93	29.2
	43 years and above	56	17.6
Gender	Female	227	71.4
	Male	91	28.6
Marital status	Married	196	61.6
	Single	122	38.4
Educational status	Vocational school of health	49	15.4
	Associate degree	106	33.3
	Undergraduate education	158	49.7
	Master's degree	4	1.3
	Doctorate	1	.3
Family type	Extended family	27	8.5
	Nuclear family	291	91.5
Number of children	1	61	31.0
	2	94	47.7
	3	36	18.3
	4	6	3.0
Monthly income status	1400-3000TL	72	22.6
	3100-4000 TL	189	59.4
	4100 and above	57	17.9
Duty in the service	Service nurse	302	95.0
	Chief service nurse	16	5.0
Years of employment in the profession	1-10 years	168	52.8
	11-24 years	114	35.8
	25-35 years	36	11.3
Years of employment in the hospital	1-9 years	214	67.3
	10-19 years	82	25.8
	20-35 years	22	6.9
Years of employment in the service	1-9 years	248	78.0
	10-19 years	63	19.8
	20-35 years	7	2.2
Total number of nurses in the service	1-10 nurses	183	57.5
	11-20 nurses	108	34.0
	21-40 nurses	27	8.5
Working status in the hospital	Staffed	289	90.9
	Contracted	29	9.1
Manner of work	Always day shift	81	25.5

	Shift	230	72.3
	Other	7	2.2
State of choosing the profession willingly	Yes	261	82.1
	No	57	17.9
State of liking the profession	Likes	224	70.4
	Does not like	24	7.5
	Undecided	70	22.0
State of being satisfied with the service	Satisfied	173	54.4
	Partly satisfied	134	42.1
	Not satisfied	11	3.5
State of choosing the department willingly	Yes	190	59.7
	No	128	40.3
Weekly working hours	20-40 hours	87	27.4
	41-72 hours	231	72.6
Number of patients given care	2-100 patients	252	81.8
	101-300 patients	28	9.1
	301 patients and above	28	9.1

Table II demonstrated the mean total Colleague Solidarity in Nurses Scale and subscale scores of the nurses. The mean total Colleague Solidarity in Nurses Scale score of the nurses was 98(47-115). The mean Emotional Solidarity, Academic Solidarity, and Negative Thoughts about Solidarity subscale scores of the nurses were 41(12-45), 38(12-45), and 19(7-25), respectively (Table II).

TABLE II  
THE MEAN COLLEAGUE SOLIDARITY IN NURSES SCALE AND SUBSCALE SCORES

	Mean (Min-Max)
<b>The Colleague Solidarity in Nurses Scale</b>	98(47-115)
Emotional Solidarity subscale	41(12-45)
Academic Solidarity subscale	38(12-45)
Negative Thoughts about Solidarity subscale	19(7-25)

Table III demonstrated the comparison of sociodemographic and professional characteristics and the mean total Colleague Solidarity in Nurses Scale and Subscale Scores of the nurses in the study. The mean total Colleague Solidarity in Nurses Scale scores varied according to the total number of nurses in the service ( $p < 0.001$ ,  $\chi^2 = 18.096$ ) and satisfaction with the service ( $p < 0.001$ ,  $\chi^2 = 20.091$ ) (Table III).

TABLE III  
COLLEAGUE SOLIDARITY IN NURSES SCALE (CSNS) AND SUBSCALE SCORES OF THE NURSES

Characteristics		The mean total CSNS (Min-Max)	The Mean Emotional Solidarity (Min-Max)	The Mean Academic Solidarity (Min-Max)	The Mean Negative Thoughts about Solidarity (Min-Max)
Age	18-25 years	98.5 (47 - 113)	41 (12 - 45)	37 (12 - 45)	21 (13 - 25)a
	26-34 years	98 (71 - 115)	41 (31 - 45)	38 (26 - 45)	19 (8 - 25)ac
	35-42 years	97 (71 - 115)	41 (25 - 45)	38 (27 - 45)	19 (8 - 25)bc
	43 years and above	96 (76 - 113)	42 (33 - 45)	39 (28 - 45)	17 (7 - 25)b
	<b>p-value test value</b>	p=0.589 $\chi^2 = 1.922$	p=0.533 $\chi^2 = 2.197$	p=0.794 $\chi^2 = 1.028$	<b>p &lt; 0.001</b> <b><math>\chi^2 = 22.662</math></b>
Gender	Female	98 (47 - 115)	41 (12 - 45)	38 (14 - 45)	19 (7 - 25)
	Male	97 (49 - 115)	41 (13 - 45)	37 (12 - 45)	19 (9 - 25)
	<b>p-value</b>	p=0.502	p=0.862	p=0.227	p=0.905

	<b>test value</b>	U=9459.50	U=9931.50	U=9328.0	U=10240.50
Marital status	Married	98 (71 - 115)	42 (31 - 45)	39 (26 - 45)	19 (7 - 25)
	Single	97 (47 - 113)	40 (12 - 45)	37 (12 - 45)	20 (11 - 25)
	<b>p-value</b>	p=0.298	<b>p=0.001</b>	<b>p=0.035</b>	<b>p=0.011</b>
	<b>test value</b>	U=10861.50	<b>U=9110.0</b>	<b>U=10221.0</b>	<b>U=9944.0</b>
Educational status	Vocational school of health	99 (47 - 113)	42 (12 - 45)	38 (12 - 45)	20 (11 - 25)
	Associate degree	97 (71 - 115)	41 (31 - 45)	37 (28 - 45)	19 (8 - 25)
	Undergraduate education	98 (71 - 115)	41 (25 - 45)	39 (26 - 45)	19 (7 - 25)
	Master's degree	96.5 (81 - 106)	40 (33 - 42)	40.5 (35 - 42)	16.5 (11 - 23)
	Doctorate	99 (99 - 99)	41 (41 - 41)	43 (43 - 43)	15 (15 - 15)
	<b>p-value</b>	p=0.860	p=0.794	p=0.260	p=0.164
	<b>test value</b>	$\chi^2=1.310$	$\chi^2=1.682$	$\chi^2=5.282$	$\chi^2=6.517$
Duty in the service	Service nurse	98 (47 - 115)	41 (12 - 45)	38 (12 - 45)	19 (8 - 25)
	Chief service nurse	98.5 (80 - 111)	42.5 (31 - 45)	40.5 (30 - 44)	18 (7 - 24)
	<b>p-value</b>	p=0.791	p=0.121	p=0.304	p=0.269
	<b>test value</b>	U=2290.50	U=1845.0	U=2042.0	U=2021.50
Years of employment in the profession	1-10 years	98 (47 - 115)	41 (12 - 45)	37.5 (12 - 45)	20 (8 - 25)a
	11-24 years	97 (71 - 115)	41 (25 - 45)	38 (27 - 45)	19 (8 - 25)b
	25-35 years	95 (81 - 113)	42 (33 - 45)	39 (32 - 45)	17 (7 - 25)b
	<b>p-value</b>	p=0.730	p=0.187	p=0.313	<b>p&lt;0.001</b>
	<b>test value</b>	$\chi^2=0.630$	$\chi^2=3.355$	$\chi^2=2.325$	<b><math>\chi^2=16.603</math></b>
Years of employment in the hospital	1-9 years	98 (47 - 115)	41 (12 - 45)	38 (12 - 45)	19 (8 - 25)
	10-19 years	98 (76 - 113)	41 (33 - 45)	38 (28 - 45)	19 (11 - 25)
	20-35 years	95 (84 - 113)	42 (34 - 45)	39 (32 - 45)	15.5 (7 - 25)
	<b>p-value</b>	p=0.880	p=0.143	p=0.494	p=0.059
	<b>test value</b>	$\chi^2=0.255$	$\chi^2=3.386$	$\chi^2=1.409$	$\chi^2=7.895$
Years of employment in the service	1-9 years	98 (47 - 115)	41 (12 - 45)	38 (12 - 45)	19 (8 - 25)a
	10-19 years	98 (78 - 113)	42 (33 - 45)	37 (28 - 45)	19 (11 - 25)a
	20-35 years	94 (84 - 99)	43 (36 - 45)	37 (32 - 45)	13 (7 - 19)b
	<b>p-value</b>	p=0.290	p=0.174	p=0.697	<b>p=0.009</b>
	<b>test value</b>	$\chi^2=2.474$	$\chi^2=3.497$	$\chi^2=0.721$	<b><math>\chi^2=9.332</math></b>
Total number of nurses in the service	1-10 nurses	99 (47 - 113)a	41 (12 - 45)a	39 (14 - 45)a	20 (7 - 25)a
	11-20 nurses	95 (49 - 115)b	40 (13 - 45)b	36 (12 - 45)b	18 (8 - 25)b
	21-40 nurses	98 (85 - 115)ab	42 (34 - 45)ab	37 (33 - 45)ab	19 (13 - 25)ba
	<b>p-value</b>	<b>p&lt;0.001</b>	<b>p=0.027</b>	<b>p&lt;0.001</b>	<b>p=0.020</b>
	<b>test value</b>	<b><math>\chi^2=18.096</math></b>	<b><math>\chi^2=7.201</math></b>	<b><math>\chi^2=18.617</math></b>	<b><math>\chi^2=7.794</math></b>
Working status in the hospital	Staffed	98 (47 - 115)	41 (12 - 45)	38 (12 - 45)	19 (7 - 25)
	Contracted	97 (73 - 111)	40 (31 - 45)	35 (26 - 45)	21 (13 - 25)
	<b>p-value</b>	p=.769	p=0.226	<b>p=0.040</b>	<b>p=0.022</b>
	<b>test value</b>	U=3396.0	U=3584.0	<b>U=3212.50</b>	<b>U=3112.50</b>
Manner of work	Always day shift	99 (49 - 115)	41 (13 - 45)	39 (12 - 45)	20 (7 - 25)
	Shift	97 (47 - 115)	41 (12 - 45)	37 (14 - 45)	19 (7 - 25)
	Other	105 (81 - 113)	43 (33 - 45)	40 (35 - 45)	23 (9 - 25)
	<b>p-value</b>	p=0.896	p=0.304	p=0.080	p=0.391
	<b>test value</b>	$\chi^2=4.903$	$\chi^2=2.379$	$\chi^2=5.059$	$\chi^2=1.879$
State of choosing the profession willingly	Yes	98 (71 - 115)	41 (25 - 45)	38 (26 - 45)	19 (7 - 25)
	No	95 (47 - 113)	40 (12 - 45)	36 (12 - 44)	20 (9 - 25)
	<b>p-value</b>	p=0.452	p=0.157	p=0.113	<b>p=0.045</b>
	<b>test value</b>	U=6858.50	U=6476.0	U=6418.0	<b>U=6180.0</b>
State of liking the profession	Likes	98 (71 - 115)	41 (25 - 45)a	38 (26 - 45)	19 (7 - 25)
	Does not like	97 (47 - 112)	41 (12 - 45)ab	39 (12 - 45)	19 (13 - 25)
	Undecided	95 (73 - 113)	39 (31 - 45)b	36 (27 - 45)	19 (8 - 25)

	<b>p-value</b>	p=0.066	<b>p=0.008</b>	p=0.086	p=0.812
	<b>test value</b>	$\chi^2=5.422$	<b><math>\chi^2=9.686</math></b>	$\chi^2=4.905$	$\chi^2=0.418$
State of being satisfied with the service	Satisfied	99 (78 - 115)a	42 (31 - 45)a	39 (27 - 45)a	20 (7 - 25)a
	Partly satisfied	95 (47 - 113)b	39 (12 - 45)b	37 (14 - 45)b	18 (8 - 25)b
	Not satisfied	101 (49 - 115)ba	41 (13 - 45)ab	40 (12 - 45)ab	21 (8 - 25)ab
	<b>p-value</b>	<b>p&lt;0.001</b>	<b>p&lt;0.001</b>	<b>p=0.013</b>	<b>p=0.018</b>
	<b>test value</b>	<b><math>\chi^2=20.091</math></b>	<b><math>\chi^2=27.372</math></b>	<b><math>\chi^2=8.689</math></b>	<b><math>\chi^2=7.991</math></b>
State of choosing the department willingly	Yes	98 (71 - 115)	42 (25 - 45)	38 (27 - 45)	19 (7 - 25)
	No	97 (47 - 115)	40 (12 - 45)	37.5 (12 - 45)	19 (7 - 25)
		<b>p-value</b>	p=0.287	<b>p=0.032</b>	p=0.384
	<b>test value</b>	U=10975.50	<b>U=10184.0</b>	U=11401.0	U=119.14
Weekly working hours	20-40 hours	98 (71 - 115)	41 (31 - 45)	40 (26 - 45)	19 (7 - 25)
	41-72 hours	98 (47 - 115)	41 (12 - 45)	37 (12 - 45)	19 (7 - 25)
		<b>p-value</b>	p=0.523	p=0.393	<b>p=0.015</b>
	<b>test value</b>	U=9415.50	U=9303.50	<b>U=8230.50</b>	U=119.14
Number of patients given care	2-100 patients	98 (47 - 115)	41 (12 - 45)	39 (12 - 45)	19 (7 - 25)
	101-300 patients	96 (77 - 115)	41.5 (31 - 45)	36 (30 - 45)	19 (8 - 25)
	301 patients and above	98 (81 - 112)	42 (35 - 45)	36 (29 - 44)	19 (13 - 25)
	<b>p-value</b>	p=0.522	p=0.123	p=0.387	p=0.633
	<b>test value</b>	$\chi^2=59.735$	$\chi^2=4.183$	$\chi^2=1.899$	$\chi^2=0.913$

Table IV demonstrated the mean total Minnesota Job Satisfaction Questionnaire and subscale scores of the nurses in the study. The mean total Minnesota Job Satisfaction Questionnaire score of the nurses was 3(1-5) (Table IV).

TABLE IV  
THE MEAN MINNESOTA JOB SATISFACTION QUESTIONNAIRE AND SUBSCALE SCORES

	Mean (Min-Max)
<b>The Minnesota Job Satisfaction Questionnaire</b>	
<b>Overall Satisfaction subscale</b>	3(1-5)
Internal Satisfaction subscale	3.7(1-5)
External Satisfaction subscale	2.75(1-5)

Table V demonstrated sociodemographic and professional characteristics and the mean total Minnesota Job Satisfaction Questionnaire and subscale scores of the nurses in the study. The mean Minnesota Job Satisfaction Questionnaire score varied according to the nurses' marital status (p=0.015, U=10023.50), duty in the service (p=0.008, U=1468.0), years of employment in the hospital (p<0.001, F=8.403), years of employment in the service (p<0.001,  $\chi^2=19.147$ ), the total number of nurses in the service (p=0.029, F=3.579), working status (p=0.008, t=2.663), state of choosing the profession willingly (p<0.001, t=4.238), state of liking the profession (p<0.001,  $\chi^2=24.641$ ), state of being satisfied with the service (p<0.001,  $\chi^2=31.335$ ) and state of choosing the service willingly (p<0.001, t=3.857).

TABLE V  
MINNESOTA JOB SATISFACTION QUESTIONNAIRE AND SUBSCALE SCORES OF THE NURSES

Characteristics		The Mean Minnesota Job Satisfaction Questionnaire (Min-Max)	The Mean Internal Satisfaction (Min-Max) Mean $\pm$ SD	The Mean External Satisfaction (Min-Max) Mean $\pm$ SD
		Mean $\pm$ SD		
Age	18-25 years	3 (1.4 – 4.8)	3.1 (1.3 – 4.6)	2.7 (1.3 – 4.6)
	26-34 years	2.9 (1.4 – 4.8)	3.1 (1.3 – 4.8)	2.8 (1.3 – 4.8)
	35-42 years	3.1 (1.7 – 4.2)	3.3 (1.8 – 4.4)	2.9 (1.4 – 4.3)

	43 years and above	3.2 (1.8 – 4.6)	3.3 (1.8 – 4.4)	2.9 (1.6 – 4.8)
	<b>p-value</b>	p=0.50	p=0.058	p=0.060
	<b>test value</b>	$\chi^2=9.864$	$\chi^2=9.076$	$\chi^2=7.413$
Gender	Female	3 ± 0.6	3.2 (1.3 – 4.6)	2.8 ± 0.7
	Male	3 ± 0.6	3.2 (1.3 – 4.8)	2.8 ± 0.7
	<b>p-value</b>	p=0.757	p=0.632	p=0.999
	<b>test value</b>	t=-0.310	U=9974.50	t=0.002
Marital status	Married	3 (1.4 – 4.8)	3.2 (1.3 – 4.8)	2.9 (1.4 – 4.8)
	Single	2.9 (1.3 – 4.6)	3.1 (1.3 – 4.6)	2.7 (1.3 – 4.8)
	<b>p-value</b>	<b>p=0.015</b>	<b>p=0.018</b>	<b>p=0.047</b>
	<b>test value</b>	<b>U=10023.50</b>	<b>U=10065.50</b>	<b>U=10375.50</b>
Educational status	Vocational school of health	3 ± 0.7	3.2 (1.3 – 4.6)	2.6 (1.3 – 4.8)
	Associate degree	3.1 ± 0.5	3.3 (2.2 – 4.4)	2.9 (1.6 – 4.8)
	Undergraduate education	3 ± 0.6	3.1 (1.3 – 4.8)	2.8 (1.4 – 4.6)
	Master's degree	3 ± 1	3.4 (1.9 – 4.4)	2.9 (1.3 – 3.6)
	Doctorate	3.1 ± 0	3 (3 - 3)	3.3 (3.3 – 3.3)
	<b>p-value</b>	p=0.163	p=0.111	p=0.292
	<b>test value</b>	F=1.642	$\chi^2=7.511$	$\chi^2=4.953$
Duty in the service	Service nurse	3 (1.3 – 4.8)	3.17(1-5)	2.8 (1.3 – 4.8)
	Chief service nurse	3.4 (2.6 – 4.4)	3.33(3-4)	3.6 (2.1 – 4.4)
	<b>p-value</b>	<b>p=0.008</b>	p=0.103	<b>p=0.001</b>
	<b>test value</b>	<b>U=1468.0</b>	U=1833.0	<b>U=1257.50</b>
Years of employment in the profession	1-10 years	0.6 ± 2.9a	3.1 ± 0.6a	2.8 (1.3 – 4.6)a
	11-24 years	0.5 ± 3.1ab	3.2 ± 0.5ab	2.9 (1.4 – 4.8)ab
	25-35 years	0.6 ± 3.2b	3.3 ± 0.6b	2.8 (1.8 – 4.8)b
	<b>p-value</b>	p=0.09	<b>p=0.011</b>	<b>p=0.031</b>
	<b>test value</b>	F=4.826	<b>F=4.586</b>	<b><math>\chi^2=6.938</math></b>
Years of employment in the hospital	1-9 years	0.6 ± 2.9a	3.1 (1.3 – 4.8)a	2.8 (1.3 – 4.8)a
	10-19 years	0.6 ± 3.1b	3.4 (1.8 – 4.4)b	2.8 (1.4 – 4.3)ab
	20-35 years	0.7 ± 3.4b	3.5 (2.1 – 4.4)b	3.3 (1.8 – 4.8)b
	<b>p-value</b>	<b>p&lt;0.001</b>	<b>p&lt;0.001</b>	<b>p=0.004</b>
	<b>test value</b>	<b>F=8.403</b>	<b><math>\chi^2=15.999</math></b>	<b><math>\chi^2=10.865</math></b>
Years of employment in the service	1-9 years	3 (1.3 – 4.8)a	3.1 (1.3 – 4.8)a	2.8 (1.3 – 4.6)a
	10-19 years	3.3 (1.7 – 4.6)b	3.4 (1.8 – 4.5)b	3.3 (1.4 – 4.8)b
	20-35 years	3.6 (3.2 – 4.5)b	3.7 (3.2 – 4.4)b	3.5 (2.8 – 4.5)b
	<b>p-value</b>	<b>p&lt;0.001</b>	<b>p&lt;0.001</b>	<b>p=0.001</b>
	<b>test value</b>	<b><math>\chi^2=19.147</math></b>	<b><math>\chi^2=21.042</math></b>	<b><math>\chi^2=13.469</math></b>
Total number of nurses in the service	1-10 nurses	0.6 ± 3a	3.1 (1.3 – 4.8)a	2.8 (1.3 – 4.8)
	11-20 nurses	0.6 ± 3.1b	3.3 (1.3 – 4.6)b	3 (1.4 – 4.8)
	21-40 nurses	0.5 ± 2.9ab	3.1 (1.8 - 4)ab	2.8 (1.4 – 3.5)
	<b>p-value</b>	<b>p=0.029</b>	<b>p=0.006</b>	p=0.266
	<b>test value</b>	<b>F=3.579</b>	<b><math>\chi^2=10.203</math></b>	$\chi^2=2.651$
Working status in the hospital	Staffed	0.6 ± 3	3.2 (1.3 – 4.8)	2.9 (1.3 – 4.8)
	Contracted	0.5 ± 2.7	2.9 (2.1 - 4)	2.5 (1.3 – 3.8)
	<b>p-value</b>	<b>p=0.008</b>	<b>p=0.007</b>	<b>p=0.007</b>
	<b>test value</b>	<b>t=2.663</b>	<b>U=2929.0</b>	<b>U=2928.0</b>
Manner of work	Always day shift	3.1 (1.3 – 4.8)	3.2 (1.3 – 4.8)	2.8 (1.3 – 4.6)

	Shift	3 (1.4 – 4.6)	3.2 (1.4 – 4.6)	2.8 (1.3 – 4.8)
	Other	3 (2.8 – 3.8)	3.3 (2.8 – 3.9)	3 (2.3 – 3.6)
	<b>p-value</b>	p=0.469	p=0.519	p=0.658
	<b>test value</b>	$\chi^2=1.516$	$\chi^2=1.311$	$\chi^2=0.837$
State of choosing the profession willingly	Yes	0.6 ± 3.1	3.2 (1.3 – 4.8)	2.9 (1.3 – 4.8)
	No	0.5 ± 2.7	2.8 (1.3 - 4)	2.6 (1.4 – 3.6)
	<b>p-value</b>	<b>p&lt;0.001</b>	<b>p&lt;0.001</b>	<b>p=0.006</b>
	<b>test value</b>	<b>t=4.238</b>	<b>U=4739.50</b>	<b>U=5707.50</b>
State of liking the profession	Likes	3.2 (1.4 – 4.8)a	3.3 (1.3 – 4.8)a	2.9 (1.3 – 4.8)a
	Does not like undecided	2.6 (1.3 – 4.1)b	2.7 (1.3 – 4.1)b	2.4 (1.4 – 4.1)b
		2.9 (1.4 – 3.9)b	3 (1.3 - 4)b	2.8 (1.3 – 4.1)ab
	<b>p-value</b>	<b>p&lt;0.001</b>	<b>p&lt;0.001</b>	<b>p=0.003</b>
	<b>test value</b>	<b><math>\chi^2=24.641</math></b>	<b><math>\chi^2=31.094</math></b>	<b><math>\chi^2=11.864</math></b>
State of being satisfied with the service	Satisfied	3.2 (1.7 – 4.8)a	3.3 (1.8 – 4.8)a	3 (1.5 – 4.8)a
	Partly satisfied	2.9 (1.4 – 4.6)b	3.1 (1.3 – 4.6)b	2.6 (1.3 – 4.8)b
	Not satisfied	2.4 (1.3 – 2.9)c	2.6 (1.3 – 3.2)c	1.9 (1.4 – 2.6)c
	<b>p-value</b>	<b>p&lt;0.001</b>	<b>p&lt;0.001</b>	<b>p&lt;0.001</b>
	<b>test value</b>	<b><math>\chi^2=31.335</math></b>	<b><math>\chi^2=24.502</math></b>	<b><math>\chi^2=28.969</math></b>
State of choosing the department willingly	Yes	0.6 ± 3.1	3.3 (1.3 – 4.8)	2.9 (1.3 – 4.8)
	No	0.6 ± 2.9	3.1 (1.3 – 4.3)	2.6 (1.3 – 4.1)
	<b>p-value</b>	<b>p&lt;0.001</b>	<b>p=0.002</b>	<b>p&lt;0.001</b>
	<b>test value</b>	<b>t=3.857</b>	<b>U=9689.50</b>	<b>U=9241.50</b>
Weekly working hours	20-40 hours	3 (1.4 – 4.4)	3.2 (1.3 – 4.4)	2.8 (1.3 – 4.4)
	41-72 hours	3 (1.3 – 4.8)	3.2 (1.3 – 4.8)	2.8 (1.3 – 4.8)
	<b>p-value</b>	p=0.876	p=0.734	p=0.655
	<b>test value</b>	U=9934.50	U=9800.50	U=9722.50
Number of patients given care	2-100 patients	3 (1.3 – 4.8)	3.2 (1.3 – 4.8)	2.8 (1.3 – 4.8)
	101-300 patients	3.3 (1.7 – 4.2)	3.4 (1.8 – 4.3)	3.1 (1.4 – 4.3)
	301 patients and above	3.3 (2 – 3.7)	3.4 (2.2 – 3.8)	2.9 (1.6 – 3.5)
	<b>p-value</b>	p=0.054	p=0.060	p=0.065
	<b>test value</b>	$\chi^2=6.761$	$\chi^2=5.623$	$\chi^2=5.470$

Table VI demonstrated the correlation between the Colleague Solidarity in Nurses Scale and the Minnesota Job Satisfaction Questionnaire. The current study found no statistically significant correlation between the mean total Colleague Solidarity in Nurses Scale score and the mean total Minnesota Job Satisfaction Questionnaire score ( $r=0.076$ ,  $p>0.05$ ) (Table VI).

TABLE VI  
THE CORRELATION BETWEEN THE COLLEAGUE SOLIDARITY IN NURSES SCALE AND THE MINNESOTA JOB SATISFACTION QUESTIONNAIRE

Scales	1	2	3	4	5	6	7
1. The Colleague Solidarity in Nurses Scale	-	0.784**	0.801**	0.635**	0.076	0.119	0.027
2. Emotional Solidarity subscale	-	-	0.645**	0.238**	0.074	0.097	0.044
3. Academic Solidarity subscale	-	-	-	0.201**	0.016	0.056	-0.024
4. Negative Thoughts about the Solidarity subscale	-	-	-	-	0.078	0.096	0.059

5. The Minnesota Job Satisfaction Questionnaire	-	-	-	-	-	0.933**	0.909**
6. Internal Satisfaction subscale	-	-	-	-	-	-	0.710**
7. External Satisfaction subscale	-	-	-	-	-	-	-

Note. Spearman's correlation coefficient. \*p<0.05, \*\*p < 0.001

#### 4. Discussion

The researchers discussed the findings, which they obtained from the present study aiming to determine the impact of colleague solidarity on job satisfaction in nurses working in a university hospital in the Central Black Sea Region which is in the North of Turkey, in line with the relevant literature.

The study found the mean total Colleague Solidarity in Nurses Scale score of the nurses to be 98 (47-115) and the mean Emotional Solidarity, Academic Solidarity, and Negative Thoughts about Solidarity subscale scores of the nurses to be 41(12-45), 38(12-45) and 19(7-25), respectively. The high mean total Colleague Solidarity in Nurses Scale score indicated that the nurses had a high level of colleague solidarity. Examining the literature, a study conducted by Çetinkaya and Alpar [22] found the total Colleague Solidarity in Nurses Scale score to be 96.6. A study conducted by Çetinkaya Uslusoy et al. [14] found the total score to be 94.9. A study conducted by Karasu et al. [25] found the total score to be 94.6. Nurses who are in constant contact and collaboration with most healthcare professionals while giving care, spend the most time with patients and families and are the most important member of the medical team, to offer quality care, simplify their work and overcome occupational difficulties, it is crucial to receive support from their colleagues [26].

The current study found that the mean total Colleague Solidarity in Nurses Scale score varied according to the total number of nurses in the service and satisfaction with the service. The score was higher in the nurses who had one nurse to ten nurses in the service and those who were satisfied with the service. A study conducted by Çetinkaya Uslusoy et al. [9] examining empathic tendency level and colleague solidarity in nurses reported that colleague solidarity scores of the nurses varied according to the years of employment, working position, state of choosing the profession willingly, and satisfaction with the service. A study conducted by Çetinkaya and Alpar [22] seeking to determine colleague solidarity and job satisfaction in nurses, found that colleague solidarity scores of the nurses showed a statistically significant difference according to their age, education, and satisfaction with the working position. A study conducted by Danacı and Koç [3] titled "Impact of Job Satisfaction and Burnout Level on Individualized Care Perception in Nurses" found that nurses who had chosen their profession and service willingly had a higher level of job satisfaction. The most important factor affecting the job satisfaction of nurses is colleague support. Nurses who work in services/organizations with colleague solidarity have a higher level of satisfaction, have increased performance and care quality, have better problem-solving skills, have fewer intra-organizational conflicts, and develop a sense of belonging [25,27].

The current study found that the mean total Minnesota Job Satisfaction Questionnaire score of the nurses varied according to their marital status, duty in the service, years of employment in the hospital, years of employment in service, the total number of nurses in the service, working status, state of choosing the profession willingly, state of liking the profession, satisfaction with the service and state of choosing the service willingly. Job satisfaction was higher in the nurses who were married, were the chief nurse in the service, had been working for 20 to 35 years, were staffed, had chosen their profession willingly, liked their profession, and were satisfied with their service. A study conducted by Tambağ et al. [8] seeking to determine the impact of work environment on job satisfaction in nurses reported that nurses who were satisfied with their service had a higher level of job satisfaction. A study conducted by Andrioti et al. [28] found that chief nurses had a higher level of job satisfaction. A study conducted by Aylaz et al. [29] found that nurses who were single and those who had chosen their profession willingly had a higher level of job satisfaction. It is expected for nurses

who like their profession and are satisfied with their service to have a higher level of job satisfaction. In addition, as the years of employment increase, the knowledge and skills of nurses increase, which is thought to affect the job satisfaction of nurses in a positive direction.

## 5. Conclusion

The current study found the mean total Colleague Solidarity in Nurses Scale score of the nurses to be 98 (47-115). The mean total Colleague Solidarity in Nurses Scale score varied according to specific sociodemographic and professional characteristics of the nurses ( $p < 0.05$ ). The scale score was higher in the nurses who had one nurse to ten nurses in the service and those who were satisfied with the service. The mean total Minnesota Job Satisfaction Questionnaire score was 3 (1-5).

The nurses who were married, were the chief nurse in the service, had been working for 20 to 35 years, nurses who were staffed, had chosen their profession willingly, liked their profession and those who were satisfied with their service had a higher level of job satisfaction. In line with the findings obtained from the study, the researchers recommended that,

- In-service training be planned to support the professional development of nurses and participation be encouraged,
- Scientific and social activities are organized to increase professional solidarity and job satisfaction,
- Interventions such as appreciation, reward, promotion, and positive feedback are made to increase the motivation of nurses.

## Conflict of interest

We have no conflicts of interest to disclose.

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