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An Evaluation of Mindful Eating, Sleep Quality and Night Eating Syndrome of Adults

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ABSTRACT:
Purpose: This study aims to investigate the differences that emerged with mindful eating, sleep quality, and night eating syndrome in adults.
Material and Methods: A survey model was used for the study, and it included randomized selected 18-65 aged 580 adults in Konya with a questionnaire consisting of demographic and anthropometric measurements, nutrition habits, Mindful Eating Questionnaire (MEQ-30), Night Eating Questionnaire (NEQ), and Pittsburgh Sleep Quality Index (PSQI).
Results: The mean ($\bar{x}$±SE) of the MEQ-30 was found to be 3.25±0.027 in women and 3.22±0.024 men. Men's emotional eating score is higher than women, and their eating control, awareness, and eating discipline scores are lower than women, eating control (p=0.002) and eating discipline differed (p=0.045) for BMI. Due to the NEQ scores, 59% of those at risk for Night Eating Syndrome (NES) were in women and 41% men. Mood/sleep dysfunction scores differed in gender among other sub-dimensions of NEQ (p=0.044). In PSQI total scores, good (14.06±0.372) (55.3%) and poor (14.22±0.355) (44.7%) sleep quality did not differ (p=0.771). A negative correlation was found between NEQ and MEQ-30 scores (p=0.815) and PSQI and NEQ scores (p=0.195). However, MEQ-30 and the PSQI scores showed significant differences (p=0.000), and the correlation was found to be low (r=0.024).
Conclusion: Mindful eating, and sleep quality scores may be variable according to gender and BMI, it has a relationship between mindful eating and sleep quality, which has not been determined by night eating behaviors. Therefore, it is important to consider that factors be an indicator of maintaining healthy eating habits.
Keywords: *Mindful eating, Sleep quality, Night eating syndrome*

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INTRODUCTION

In recent years, the relationship between sleep and eating behavior has begun to be examined yet. Healthy nutrition behaviors, sleep quality and sleep disorders are relationship with each other (Chaput, 2014; Frank et al., 2017; St-Onge et al., 2016). Sleep quality plays an important role so that feel ready and be more vigorous for a new day. In cases where the sleep quality is qualitatively and quantitatively low, memory loses, health status, working and social life, and mental status can be affected (Briguglio et al., 2020; Navarro-Sanchis et al., 2017; Zhang et al., 2017). Night Eating Syndrome (NES), which is one of the eating behavior disorders seen during the sleep period, may occur due to different causes. NES as a clinical disorder characterized by evening hyperphagia, morning anorexia and insomnia, considering it to cause obesity, especially in obese individuals who are resistant to weight loss (Allison et al., 2010). The incidence of NES is approximately 1.5% in public, but in obese patients' rate was rising to 8.9%, and in eating behavior disorders (e.g., anorexia nervosa and bulimia nervosa) is changed from 9% to 16%. Symptoms for NES is that at least 25% of the daily food consumption occurs after the evening meal, reluctance to eat in the morning or

skipping breakfast 4 or more times a week, and a strong desire to eat during the time between dinner and starting sleep and/or during the night (Cleator et al., 2012; Gwin and Leidy, 2018). Eating behaviors due to genetic variations related to the serotonergic system and circadian rhythm have been shown to be related to sleep, mood, mealtime, and obesity, like NES (Huang et al., 2011; Tzischinsky et al., 2021). The concept of mindfulness has an important role in the examination of nutrition and dietary behaviors. Mindfulness skills may include features such as menu planning, portion control, and body weight management, preventing emotional eating, and stopping excessive food consumption, unlike the most well-known cognitive skills (Framson et al., 2009). Studies (Conversano et al., 2020; Kabat-Zinn, 2015; Masuda and Tully, 2012) mention that mindful eating is beneficial in alleviating the relationship between healthy eating behaviors and eating habits, reducing stress, weight loss and control, obesity and eating behavior disorders. It has also been shown to encourage the obese to improve their psychological and physical health. Mindfulness intervention showed a significantly greater decrease in emotional eating and external feeding; thus, it can effectively reduce the factors associated with problematic eating behavior (Winkens et al., 2018, 2019). Besides emotional regulation, interventions using mindfulness and mindful eating techniques are reported to be effective in reducing depressive symptoms and emotional eating and improving intuitive eating (Czepczor-Bernat et al., 2020). The aim of the study is to find out the relation between sleep quality, NES, and mindful eating in adults.

MATERIAL and METHODS

Purpose and Type of the Study

The purpose of the study is to find out the relation between sleep quality, NES, and mindful eating in adults. The study was designed as a survey model and variables were analyzed descriptively.

Sampling and participant

The sample was calculated in G*Power 3.1.9.2 software program. The program set as 0.15 for the effect size, 0.05 for the margin of error (α) and 0.95 for the power (1-β), and the sample size was calculated 580. Study group has generated by randomized adults residing in Konya, Turkey.

Data Collection Tools

The data were obtained between May and July 2021 with a face-to-face interview questionnaire. Questionnaire consists of 4 sections: (1) demographic and anthropometric measurements, nutrition and eating habits, (2) Mindful Eating Questionnaire (MEQ-30), (3) Night Eating Questionnaire (NEQ), (4) Pittsburgh Sleep Quality Index (PSQI). The questionnaire constitutes with benefit from studies (Agargun et al., 1996; Atasoy et al., 2014; Köse et al., 2017; TDG, 2016; WHO, 2019) and three experts helped finished the questionnaire. First practice conducted on 30 adults and necessary corrections fixed before the sampling. In the first part, demographic characteristics (e.g., age, gender), and nutritional habits (e.g., skipping meal, fast food consumption) and anthropometric measurements such as height (m) and body weight (kg) of adults were taken according to their own self-assessments. Body Mass Index (BMI) was calculated (kg/m^2) and determined by reference to Turkish Dietary Guide (TDG, 2016). In the second part, MEQ-30 was used to measure the mindful eating. The scale includes 7 sub-dimensions. MEQ-30 developed by (Framson et al., 2009) and Turkish validity and adaptation of the scale was done by Kose et al. (2017). Evaluation of the scale was scored forward and reverse with a 5-pointed Likert scale (1 to 5 points). Seven sub-dimensions in the scale are evaluated within themselves, an average of 3 points or more indicates they have it. The Cronbach α of the Turkish-adapted MEQ-30 was found 0.73. In the third part, NEQ assesses NES's behavioral and psychological aspects. In the NEQ, hunger, cravings, calories intake after dinner, insomnia and waking up from sleep, the desire to eat at night, the presence of eating behaviors, and their mood of individuals developed by (Allison et al., 2006) and adapted to Turkish (Atasoy et al., 2014) which consist of 17 items and scored between 0-4 using a 5-pointed Likert scale except for the 7th item. 1., 4. and 14. items were reverse scored. The total NEQ score is between 0-52 points. 15. and 16. items in the questionnaire were not included in the scoring. As a result of the total

NEQ scores, 25 points and below were evaluated "no risk", 25-30 points "risky", and 30 points and above "high risk". PSQI is in the fourth section of questionnaire. Agargun et al. (1996) adapted to Turkish version. PSQI consists of 19 items and 7 sub-dimensions. All items in the scale scored between 0 and 3 points. The sum of the scores of the seven sub-dimensions of sleep quality represents the total PSQI score. Sleep quality of those with a PSQI total score of less than 5 point was considered as "good", and those of 5 point and above were "poor".

Statistical Analysis

Data control was performed to analyze the data obtained from the questionnaires. Incorrectly coded or blanked data were removed using frequency analysis. After they were transferred into the using SPSS 22.0 statistical program. Data were categorized as frequency (n), percentage (%), and mean ($\bar{x}$), standard error of mean (SE) were obtained from descriptive statistics. In addition, advanced analyzes were carried out by using the parametric (e.g., Independent T test, One way ANOVA) for the data. Correlation (*r*) and regression analyzes were also performed to reveal the relationship between the data. Significance level of 0.05 was taken as a criterion for difference.

Ethical Approval

An ethic report exists of numbered 2019/14558 Selcuk University Health Sciences Faculty Ethics Committee of Non-Interventional Clinical Investigations. Adults were not included in the study without consent.

RESULTS

According to the results, it was determined that 48.4% of the adults are women and 51.6% men, and under 25, 25-34, 35-44, 45-54, 55–65-year-old found 29.6%,19.7%, 24.8%, 26%, 15.6, and 9.6%. Primary, secondary, high school, undergraduate and postgraduate education levels 4.3%, 6.5%, 28.6%, 60.6% respectively. The average mean of BMI obtained 24.5±0.280 in women and 25.5±0.260 in men and differed by gender (p=0.013). In total, a great majority was calculated in normal (49.1%) and pre-obese (34.8%) for BMI.

In Table 1, it was represented that significant difference between emotional eating (p=0.000), eating control (p=0.000), awareness (p=0.002) sub-dimensions between gender (p<0.05). Emotional eating score of men's is higher than women, and their eating control, awareness, and eating discipline scores are lower than women. In addition to this result, eating control (p=0.002) and eating discipline (p=0.045) differed in BMI. Accordingly, underweight group higher in eating control scores, on the other hand obese class II was the highest scores in eating discipline between others (p<0.05), but disinhibition, emotional eating, awareness, mindful eating, and interference, at the same time neither gender nor BMI for total score did not (p>0.05).

According to the NEQ scores, 59% of those at risk for NES were women and 41% in men. Mood/sleep dysfunction scores differed in gender among other sub-dimensions of NEQ (p=0.044). Considering the total NEQ score, 93.3% of adults do not have NES risk, while 6.7% have it (p>0.05). The mean of NEQ scores underweight, normal, pre-obese, obese class I and II were found 13.21±1.003, 14.38±0.376, 14.13±0.439, 13.30±0.844, and 13.86±1.612 respectively (p>0.05) (Data not shown). Lent et al. (2022) and Wang et al. (2014) night eating behaviors related to higher BMI; it's clearly targeted to the obesity. Olejniczak et al., (2018) reported that 40.7% of obese women with NES. O'Reardon et al. (2005) and Pinto et al. (2016) found NES incidence is nearly 1.5% all over the population but clinically follow-up overweight patients were 10% to 42%.

Another finding is PSQI scores in total good and poor sleep quality determined 55.3% and 44.7%, respectively, women (25.2%) have a higher poor sleep quality than men (19.5%) and significant difference in gender (p=0.001). On the contrary, sleep quality not differed by BMI (p>0.05). When black tea consumption after at 08:00 pm to go to bed compared with sleep quality compared, 55.0% had good, and 45.0% poor quality (p>0.05). Similar results in coffee consumption in same time, good quality was found 45.7% and poor 54.3% but unlike black tea, coffee consumption affects (p=0.005). This result is directly related to the consumption of caffeinated beverages.

Table 1. MEQ-30 scores of adults (n=580)

MEQ-30		Groups	x̄±SE	p*
Disinhibition	Gender	Women	3.35±0.807	0.327
		Men	3.42±0.796	
	BMI	Underweight	3.71±0.194	0.319
		Normal	3.38±0.047	
		Pre-obese	3.39±0.054	
		Obese Class I	3.35±0.110	
		Obese Class II	3.20±0.261	
Emotional Eating	Gender	Women	3.42±0.611	0.000
		Men	3.75±0.055	
	BMI	Underweight	3.99±0.197	0.121
		Normal	3.51±0.059	
		Pre-obese	3.65±0.072	
		Obese Class I	3.69±0.118	
		Obese Class II	3.42±0.267	
Eating Control	Gender	Women	3.01±0.045	0.000
		Men	2.72±0.039	
	BMI	Underweight	3.18±0.141[a]	0.002
		Normal	2.94±0.040[ab]	
		Pre-obese	2.80±0.053[bc]	
		Obese Class I	2.64±0.107[bc]	
		Obese Class II	2.52±0.190[c]	
Awareness	Gender	Women	3.25±0.032	0.002
		Men	3.11±0.030	
	BMI	Underweight	3.09±0.108	0.823
		Normal	3.17±0.034	
		Pre-obese	3.18±0.034	
		Obese Class I	3.21±0.060	
		Obese Class II	3.18±0.106	
Eating Discipline	Gender	Women	3.08±0.046	0.059
		Men	2.96±0.044	
	BMI	Underweight	2.72±0.129[a]	0.045
		Normal	3.02±0.043[b]	
		Pre-obese	2.99±0.057[b]	
		Obese Class I	2.83±0.111[ab]	
		Obese Class II	3.08±0.205[c]	
Mindful Eating	Gender	Women	2.93±0.030	0.798
		Men	2.92±0.032	
	BMI	Underweight	2.83±0.106	0.612
		Normal	2.90±0.032	
		Pre-obese	2.94±0.037	
		Obese Class I	3.01±0.078	
		Obese Class II	2.93±0.128	
Interference	Gender	Women	3.72±0.047	0.625
		Men	3.68±0.048	
	BMI	Underweight	3.82±0.171	0.079
		Normal	3.68±0.047	
		Pre-obese	3.79±0.057	
		Obese Class I	3.50±0.118	
		Obese Class II	3.43±0.217	
Total Score	Gender	Women	3.25±0.027	0.459
		Men	3.22±0.024	
	BMI	Underweight	3.33±0.084	0.396
		Normal	3.23±0.025	
		Pre-obese	3.26±0.032	
		Obese Class I	3.17±1.063	
		Obese Class II	3.12±0.118	

[a],[b], [ab],[bc],[c] Difference groups obtained from using with Oneway ANOVA-Duncan Test.

Table 2. A comparison of sleep quality and MEQ-30 and NEQ scores (n=580)

MEQ-30	PSQI	x̄±SE	p [a]
Disinhibition	Good	3.47±0.043	0.005
	Poor	3.28±0.051	
Emotional Eating	Good	3.72±0.054	0.000
	Poor	3.43±0.063	
Eating Control	Good	3.65±0.039	0.044
	Poor	3.49±0.046	
Awareness	Good	3.19±0.027	0.455
	Poor	3.15±0.037	
Eating Discipline	Good	3.12±0.042	0.000
	Poor	2.87±0.046	
Mindful Eating	Good	2.97±0.286	0.023
	Poor	2.87±0.351	
Interference	Good	3.72±0.090	0.405
	Poor	3.67±0.100	
Total	Good	3.30±0.023	0.000
	Poor	3.15±0.028	

[a]Independent T Test

NEQ	PSQI	x̄±SE	p [a]
Nocturnal ingestion	Good	4.08±0.235	0.867
	Poor	4.03±0.234	
Evening hyperphagia	Good	4.64±0.112	0.865
	Poor	4.72±0.113	
Morning anorexia	Good	2.28±0.076	0.730
	Poor	2.32±0.080	
Mood/sleep disfunction	Good	3.07±0.146	0.623
	Poor	3.16±0.113	
Total score	Good	14.06±0.372	0.771
	Poor	14.22±0.355	

[a] Independent T Test

Table 3. The relationship between MEQ-30, PSQI, and NEQ total scores

	Independent Variable	B	Std. Error	β	t	p
MEQ-30	PSQI	0.023	0.006	0.156	3.808	0.000[a]
MEQ-30	NEQ	-0.001	0.005	-0.010	-0.234	0.815[b]
PSQI	NEQ	-0.040	0.031	-0.054	-1.299	0.195[c]

[a] F=14.501, p =0.000, R^2=0.024; [b] F=0.904, p=0.815, R^2=0.002; [c] F=1.687, p =0.195, R^2=0.003

MEQ-30 scores differed for the sleep quality in five sub-dimensions and total score (p<0.05) except awareness and interference showed in Table 2. Accordingly, the sub-dimension scores of MEQ-30 with good sleep quality, disinhibition, emotional eating, eating control, eating discipline, and mindful were found to be higher than poor sleep quality. The important thing was that these results overlapped significantly with each other. The total score of MEQ-30 good and poor sleep quality was found 3.30±0.023 and 3.15±0.028, respectively (p=0.000). Adults with good sleep quality have higher mindful eating total scores than with poor sleep quality.

According to Table 3, the linear regression model established between the MEQ-30 score and PSQI score, the difference is significant (p=0.000). Increasing the PSQI score by one unit will increase the MEQ-30 score by β=0.156. On the other hand, other regression models established between the MEQ-30 score and the NEQ total score (p=0.815) and PSQI total score and the NEQ total score (p=0.195) did not. Köse & Tayfur, (2021) emphasized that only emotional eating correlates with sleep duration (p<0.05) but the total MEQ-30 score did not (p>0.05).

DISCUSSION

Many studies (Al-Musharaf, 2020; Kristeller et al., 2014; Modrzejewska et al., 2022) expressed that the factor that differentiates eating motives and behaviors is BMI and they implied higher levels of unhealthy motivations and eating behaviors (e.g., more emotional, and less mindful eating) with excess body weight compared to the healthy body weights in adults. But mindfulness and slow eating techniques are widely recommended for achieving weight loss within behavioral weight management programs, and the role of these eating strategies on energy intake and satiety is controversial (Simonson et al., 2020). Khosravi et al. (2021) reported that 42.9% of adults had poor sleep and habitual sleep

efficiency is the highest parameter of discrimination. Other studies (Asghari et al., 2012; Hinz et al., 2017; Wong and Fielding, 2011) like our results about PSQI scores. Atalıkoğlu Başkan and Güneş (2021) in their studies, the higher total score of PSQI than results and poor sleep quality is 71.6%. In addition, Huang and Zhao (2020) and Xiao et al. (2020) find similar results accordance with us. Watson et al. (2016) and Iranpour et al. (2020)stated shorter sleep is associated with greater caffeine consumption, and that consumption is greater in adults with reduced sleep quality, they overlapped our data. Demirbas et al. (2021) highlighted higher scores in BMI and sub-dimensions in males, obese participants for eating disinhibition, their eating control, eating discipline, and interference scores upper than normal weight. Other studies (Giannopoulou et al., 2020; Grosso et al., 2017; Köse et al., 2017; Köse & Tayfur, 2021) findings like us, but awareness and interference were varied from others and at the same time they announced a relationship between sleep duration and eating attitudes and sleep quality is a vital role of life. When we looked at the PSQI total scores for good (14.06±0.372) and poor (14.22±0.355) sleep, they were close to each other (p=0.771) (Table 2). On the contrary to many MEQ-30 sub-dimension scores, sleep quality did not vary from NEQ (p>0.05). Akdevelioğlu et al. (2020) found similar NEQ scores in accordance with BMI (p>0.05), and sleep quality (p<0.05) compared with our findings (Table 2) and they represented a close correlation between NES to daily nutrient and energy intake of participants. Other studies (Allison et al., 2005; Türközü and Aksoydan, 2015) support our study that no difference between NES and sleep quality. Talley and Shelley-Tremblay, (2020) in their study, mediated emotion regulation with mindfulness had a relationship with sleep quality. Caldwell et al. (2011) reported that increases in mindfulness were significantly correlated with sleep quality. NES is close to obesity-related behaviors in this context, Battles (2018) expressed mindful eating was a unique predictor of eating behaviors like NES.

CONCLUSION

In our study, we tried to evaluate adults in terms of eating mindful eating, sleep quality, and night eating syndrome status and their relations. Ongoing healthy eating behaviors are affected by environmental such (e.g., sleep) and individual factors (e.g., BMI). Mindful eating is a major indicator to change eating behavior during life. Not only to healthy eating behaviors but also to fight and treat nutrition-related non-communicable diseases such as obesity and others. It has been shown in this study, as well as in other studies, that mindfulness in eating behavior is of great importance not only in the consumption of foods, but also in emotion, mood, control, and other hedonic components in shaping and maintaining eating behaviors in individuals. Because it would be more accurate to examine eating behavior from a multidimensional perspective. The fact that mindful eating is closely related to sleep quality shows that sub-dimensions can also be evaluated in this context. However, the interesting part of the study was that while differences in sleep quality were determined, they did not with night eating behaviors. This situation explains the importance of irregular meal patterns and the need to be evaluated within the daily routine of staying awake. It may be suggested to reveal the factors affecting eating awareness with further studies.

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Conflict of Interest

All authors declared no conflict in the study.

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Changes in the Lives of Peritoneal Dialysis Patients and Coping with it: Qualitative Study

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ABSTRACT:
Purpose: In this study, it was aimed to determine the life changes and coping ways of peritoneal dialysis patients after peritoneal dialysis (PD) treatment.
Material and Methods: Qualitative research method and phenomenology, which is a pattern of this method, were used in the study. The study group consisted of six peritoneal dialysis patients followed in the Adult Peritoneal Dialysis Unit Center. A semi-structured interview form was used as a data collection tool. During the research process, the interviews with the participants were audio-recorded with permission of the participants. After the audio recordings were written down, content analysis was made by creating code-category and themes. During the study, validity-reliability was tried to be ensured.
Results: The findings consist of two themes, seven categories and fifty codes. After the PD treatment, it was determined that the participants had problems in terms of nutritional status, sleep patterns, physical activity, social life, family relations, physical appearance, professional and sexual life, and adaptation to life. It was determined that they experienced the most financial difficulties the most in their lives after the PD treatment, and all the participants stated that they wanted to receive government financial support.
Conclusion: In line with these results, it is recommended to establish counseling centers that can provide psychosocial support to patients, establish psychoeducational programs, initiate necessary procedures to create financial support within the state.
Keywords: *End-stage renal disease, Peritoneal dialysis, Qualitative research*

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INTRODUCTION

Chronic kidney failure (CKD) is a disease with high morbidity and mortality rates, negatively affecting the quality of life, placing a great burden on health budgets, having low awareness and early diagnosis, but can be prevented or slowed down if early diagnosis is done (Türkiye Böbrek Hastalıkları Önleme ve Kontrol Programı, 2014). End-stage renal disease (ESRD) is the last stage of chronic kidney failure. ESRD has become an important health problem due to the increasing incidence (Seyahi et al., 2018). In order for patients with end-stage renal disease to survive, dialysis or kidney transplantation treatments called renal replacement therapy should be applied. One of these treatment methods is peritoneal dialysis (Türkiye Böbrek Hastalıkları Önleme ve Kontrol Programı, 2018). In the 2020 Summary Report of the Turkish Society of Nephrology Registry, it was reported that 83,350 patients received renal replacement therapy in Turkey as of 2020, and 4.06% of the patients were using peritoneal dialysis (Süleymanlar et al., 2021). Peritoneal dialysis (PD) is a low-cost and easy-to-apply method with a good prognosis (Türkiye Böbrek Hastalıkları Önleme ve Kontrol Programı, 2014). While it allows patients to carry out and manage their own treatment and care in their own homes, patient follow-up is carried out with monthly

controls (Curtin et al., 2008). In patients with peritoneal dialysis and treatment, various problems can be seen with mandatory life changes. These include restriction of diet and fluid intake, loss of physical strength and endurance, financial difficulties due to factors such as job loss or mandatory retirement, loss of role or change in role performance, change in family process, and limitation of recreational activities. In addition, patients experience changes in body image due to the presence of an abdominal catheter, sexual dysfunction may develop due to the psychological effect of the catheter on sexual performance (Theofilou, 2012). It is seen that PD often causes sexual dysfunction in female patients and erectile dysfunction in male patients (Yılmaz and Özaltın, 2011; Pyrgidis et al., 2021; Abdelaal et al., 2021). With the introduction of peritoneal dialysis into the lives of patients, these physical and psychosocial difficulties reduce the individual's compliance with peritoneal dialysis (Wang et al., 2014). In the study by Wang et al (2014), it was determined that psychosocial adjustment was low in peritoneal dialysis patients, and more than half of them had adjustment problems in their professional environment, family environment, sexual relationship, extended family relationships, and social environment. In the research of Duran and Güngör (2015), it was stated that patients experience fear when they first learn about their disease and then they get used to the situation. Patients intensely think that nothing will be the same as before, and difficulties related to treatment complicate the adaptation process. Similarly, in the study of Karaca et al. (2012), 46.6% of the patients stated that "nothing is the same in their private life, it is more complex and difficult". It has been stated that especially at the beginning of peritoneal dialysis, patients have difficulties in coping because they change all day long, have no free time and have difficulty in self-care responsibilities (Chan et al., 2011). Although many quantitative studies have been conducted on peritoneal dialysis patients (Baykan and Yargic, 2012; Ören and Enç, 2013) there are not many qualitative studies in the literature (Tannor et al., 2017; Petersson et al., 2017; Ahmadi et al., 2018; Fox et al., 2020). However, focusing on the individual's own expressions in understanding the problems experienced by individuals will enable the problem to be revealed more clearly. In a mixed-patterned study comparing hemodialysis and peritoneal dialysis patients in the literature, while the data obtained with the scales were similar, it was seen that individuals expressed problems in different life areas in qualitative interviews. Moreover, although there are many studies on HD (hemodialysis) patients, quantitative and qualitative studies on PD patients seem to be limited. Because PD patients experience fewer complications and have less hospitalization, the problems they experience can be ignored. With this study, it is aimed to draw attention to the changes in the lives of peritoneal dialysis patients and their ways of coping after the treatment.

MATERIAL AND METHODS

Purpose and Type of the Study

In this study, the "phenomenology" pattern, which is one of the qualitative research methods, was applied.

Sampling and Participant

Maximum diversity, which is a type of purposive sampling method, was used to form the study group. With maximum variety, the goal is not to generalize, but to find out what differences or similarities the facts have (Yıldırım and Şimşek 2013). In accordance with this purpose, the study group consisted of patients within the scope of the Adult Peritoneal Dialysis Center located in a city. Maximum diversity was tried to be achieved in terms of PD treatment time and gender. To provide maximum variation according to the duration of peritoneal dialysis, long (patients undergoing PD for ten and twelve years), medium (patients undergoing PD for two years and five years) and short-term (patients undergoing PD for three months and six months) patients were selected, and three female and three male participants were studied according to gender. Since it is thought that data saturation has been reached based on the fact that the same codes are constantly coming in the study, the study was completed with six people. Patients were included in the study between September 2018 - April 2019. Participant

numbers were given to six patients who were interviewed. Demographic data of the participants are presented in Table 1. When the sociodemographic characteristics of the participants are examined in Table 1, half of the participants were women, half were men, their ages were between 35- and 58 years old, and their education level was at primary and high school levels.

Table 1. Sociodemographic Characteristics of the Participants

Participant	Gender	Age	Education Status	Marital Status	Number of Children	Working Status	PD Treatment Time	Chronic Disease	Smoking
P1	Male	53	High school	Married	3	Retired	3 months	Diabetes	Yes
P2	Female	58	Primary school	Married	2	Housewife	6 months	No	No
P3	Female	31	High school	Married	No	Secretary	2.5 years	Diabetes, Hypertension	No
P4	Male	35	High school	Married	No	Craft	1.5 years	Diabetes	No
P5	Male	57	Primary school	Married	3	Retired	12 years	No	No
P6	Female	45	Primary school	Married	3	Housewife	10 years	Diabetes, Hypertension	No

Data Collection Tools

In this study, an introductory characteristics information form consisting of nine questions prepared by the researchers using the literature (Duran and Güngör, 2015; Peker, 2007) was used as a data collection tool to determine some sociodemographic and disease-related characteristics of peritoneal dialysis patients. Afterwards, a semi-structured interview form with open-ended questions was used. The semi-structured interview is done by preparing the interview questions in advance and rearranging the questions created by providing partial flexibility during the interview (Ekiz, 2015). The questions in the interview form were created as a result of the literature review (Peker, 2007; Wang et al., 2014; Duran and Güngör, 2015; Tannor et al., 2017). In the interview form, there are sixteen basic questions and two probe questions about the patient's thoughts, values and perceptions about life after peritoneal dialysis, and changes in their life with peritoneal dialysis. A total of eighteen questions in the interview form were subjected to expert corrections and validity was ensured by making necessary corrections.

Pre-treatment

To evaluate the sociodemographic and semi-structured interview form prepared, a preliminary treatment was made by the researchers for two peritoneal dialysis patients who were treated in the nephrology service. After the pre-treatment, data were started to be collected without making any changes in the forms. Patients who participated in the preliminary treatment were not included in the study.

Data Collection Process

After the individuals who met the criteria were informed about the content of the study, their consent was obtained. Individuals were informed that the interviews would be made with a voice recorder. The interviews were conducted in a quiet home environment, where factors that could affect the collection of data were minimized. Sociodemographic data were read by the researchers and filled in line with the answers of the patients. The semi-structured interview was audio-recorded and the interviews lasted an average of 30-40 minutes.

Validity-Reliability

Internal validity is defined as the adequacy of the process followed while reaching the research results to reveal the studied reality and the events that we think we have observed as the researcher. Moreover, internal validity is defined as the degree to which our interpretations of facts, which we think

we understand, reflect the real situation (Yıldırım and Şimşek, 2013). A semi-structured interview form was used in the research. While performing the content analysis, themes, categories and codes were created that are broad enough to cover related concepts and narrow enough to exclude irrelevant concepts. The created themes and categories were checked by an expert and researchers. To ensure the internal validity of the qualitative data obtained in the research, it was given importance to include acquaintances and conversations at the beginning of the interviews, and it lasted for about 30-40 minutes, with the thought that an atmosphere of trust will be created over time and the interviewee may be more sincere as the interview period progresses. Besides, care was taken to ask alternative questions included or not included in the interview form to obtain detailed information. The answers given by the participants in the interview are given in quotation marks without changing them in the results section. To ensure external validity, the research model, study group, data collection tools, data collection, data analysis and how the findings were organized were described in detail. Besides, the participants of the study were formed from suitable individuals who would contribute to the purpose of the study. All of the findings in the study were presented to the reader as direct quotations without comment. Since the recording device was used during the interview, it was tried to increase the internal reliability by preventing the loss of the data obtained during the interview. The data were read independently by four researchers. Moreover, codes, categories and themes were created. While creating codes, categories and themes, a consensus was reached among the researchers. To ensure external reliability, the data analysis, results, discussion and conclusion part of the research were approved by an expert in the field of research methods.

Statistical Analysis

The content analysis method was used in the analysis of the data. In this framework, data were defined through content analysis, and similar data were gathered and interpreted within the framework of certain concepts and themes (Yıldırım and Şimşek 2013). The code, category and theme, which four researchers independently created and after which the transcripts were read over and over and the consensus was reached, are shown in tables in the results section.

Ethical Approval

To conduct the research, approval from the Clinical Research Ethics Committee of a University (2017/493) and institutional permission from the Health Practice and Research Center Adult Peritoneal Dialysis Center were obtained. Moreover, verbal and written informed consent was obtained from the patients who participated in the study by explaining the research.

RESULTS

The results consist of two themes, seven categories and fifty codes (Table 2). Codes were created according to the answers given by the patients to the open-ended questions under the themes and categories and are given below with direct quotations from the participants.

Patient Opinions on the Category of Feelings at the Beginning of Peritoneal Dialysis Treatment

Two codes (getting upset, stress) were created for the question of how did you feel when you first learned that you would start PD practice.

Individuals receiving PD treatment expressed their thoughts about starting the practice as;

-P1: "*I got a little stressed out. I mean, what's going on, what's going to happen.*"

-P2: "*I was so sorry*."

-P6: "*I got stressed*."

Patient Opinions Regarding the Category of Meaning of Peritoneal Dialysis Treatment

Two codes (living, unable to work) were created regarding the meaning of peritoneal dialysis treatment. Except for P5, other participants considered the living code.

Participants explained the meaning of peritoneal dialysis treatment as;

-P3: "*Living (laughing). So, without it, I can hardly breathe because my body swells and puddles, so I have to do it to live*."

-P5: "*I met this at the age of 46, I would like to work,*

but it had effects such as not being able to work."

Patient Opinions on the Category of Change in Physiological After Peritoneal Dialysis Treatment

Participants indicated the changes in nutritional status after PD treatment with the codes of eating without salt, eating less and inability to eat between meals. All participants used the expression "eating without salt".

-P1: "*When you start peritoneal dialysis, you can eat a little bit of everything. You eat little and without salt*."

-P4: "*We have to eat without salt, my order changed when I'm out and I can't eat snacks*."

All participants stated that their sleep patterns were disturbed after the PD treatment.

-P1: "*I can't sleep at night because of the itching in my body. It's like a nightmare*."

-P4: "*I am worried because I am connected to the machine and my sleep is disturbed*."

Participants stated that the change in physical activity after PD treatment was the inability to walk, fatigue, slowing down, strain and constriction.

-P1: *"After I start peritoneal dialysis, I can't walk much. I am getting tired."*

-P3: *"I slowed down a lot. Now I have a hard time walking. For example, while I was working at home, I was a person who always cleaned the house for two hours in an hour, now I see a room and I am sitting. I have to rest because I am short of breath."*

Participants discussed the codes of change in skin color, itching, and weight gain as changes in physical appearance after PD treatment. All participants stated that they had skin problems. They stated as,

-P1: *"Because my body was itchy, my skin color changed and darkened."*

-P2: *"I have a lot of itching, my legs are very swollen and there is edema. There is a problem after the bath due to the catheter."*

-P6: *"My legs and body are very itchy, my skin is dry, and I gain weight due to inactivity."*

Among the participants, P3, P4, P5 and P6 stated that there was a change in their sexual life after the PD treatment, while P1 and P2 did not experience any change.

-P1: *"I haven't lived a sexual life like that for about two years. My wife didn't want it, so I said OKAY."*

-P3: *"Of course, it has changed. My stomach is swelling. When my husband gets on me, I have a hard time pushing. This situation reduces my desire."*

-P4: *"It's not like before, there are times when I have an erection problem."*

- P5: *"Unfortunately. It's like I have no sex life."*

Patient Opinions Regarding Change in Social and Vocational Life After Peritoneal Dialysis Treatment (Travelling, Visiting Friends, Shopping, etc.)

After the PD treatment, the participants stated that they could not go out of the house, visit their friends, go to distant places, go out at certain times, have difficulty while traveling, and have difficulty in shopping and housework as a change in their social life.

-P1: *"There has been a lot of change (researcher: What happened?) I can't do dialysis everywhere. For the thing, what was it? (Researcher: Hygiene). Yes, because of the hygiene and risk of infection, I cannot easily get dialysis anywhere. I cannot leave the house. Therefore, there have been many changes. I can't go much to visit my friends."*

-P2: *"I can't go out, I can't go shopping, I have trouble with housework, the daily routine of my life has changed."*

-P3: "*I had a hard time… While I was traveling, for example, I went to Antalya on vacation, I was very scared there. Because I'm a person who gets a lot of infections. The machine was a problem there because I had to take the machine. I took two suitcases with water and so on."*

-P5: *"I am limited when I want to go somewhere. For example, we have vineyards. I can't go, I would like to go, viticulture is also an occupation."*

The codes of being unkind, giving support, distancing and having an experienced family in the change in family relations after the PD treatment were discussed. Among the participants;

-P1 stated that he started to be unkind in his family relations during this process. *"I'm starting to get a little nervous. So, when they say a word to me, I misunderstand. I can be unkind sometimes."*

-P3 stated that she had an experienced family and that her family supported her. "*My father has diabetes. My brother was a dialysis patient. Since my family is experienced in diseases, we did not have any*

problems. I have already accustomed my husband to everything. When I am uncomfortable, he takes care of everything for me. He's setting up my machine. He is my biggest supporter."

Table 2. Changes in the Lives of Patients Treated with Peritoneal Dialysis and Coping with it

Theme		Category	Code
Theme 1 Peritoneal Dialysis Treatment		**Category 1.** Feelings at the start of the treatment	Getting upset Stress
		Category 2. Meaning of the treatment	Living Unable to work
Theme 2 After Peritoneal Dialysis Treatment	**Subtheme 1** Change in life	**Category 3.** Change in physiological	Eating without salt End of sexual life Decreased sexual desire Erection problem Not changing Change in Skin Color Itching Gaining weight Eating less Inability to eat between meals Disruption Inability to walk Fatigue Slowing down Strain Constriction
		Category 4. Change in social and vocational life	Not Leaving the House Not Going to Visit Friends Inability to Go to a Far Place Going Out at Certain Hours Difficulty Traveling Difficulty with shopping/housework Being unkind Giving Support Distancing Having an experienced family Quitting work Being bored Having difficulty Ability to continue working with PD Not changing
	Subtheme 2 Adaptation-Coping	**Category 5.** Adaptation to life	Having difficulty Not having difficulty
		Category 6. Coping	Using available opportunities Talking to spouse Getting angry Self-talk/negotiation Smoking Belief Getting used to Acceptance
		Category 7. Needed support	Financial resources Government contribution Family contribution Transplant requests from people Being listened

-P5 stated that his wife and children supported him in the family relationship and that he distanced himself from his close relatives. *"People call and ask, but there is not that much closeness, even my siblings, they call once a month (sadly), my spouse and children are different."*

-P6: *"I can't share everything because people will get upset, I started to make the distance. But my husband and children help in everything."*

Participants explained the change in professional life after the PD treatment with the codes of quitting the job, being bored, having difficulty, being able to continue working with PD, and not changing. In the study, P2 and P6 stated that they were housewives and the treatment did not affect their professional life. Moreover, P3 and P4 stated that they continued to work with the PD.

-P1: *"I was a truck driver, I quit and retired."*

-P4: *"I do my own business, I have an assistant with me, I go because my work environment is available."*

-P5: *"I had to quit my job. Where should I do the dialysis? Which workplace will allow me? It also causes financial difficulties."*

Patient Opinions on the Category of Adaptation to Life After Peritoneal Dialysis Treatment

Among the participants, P3 and P5 stated that they had no difficulty in adapting to life after the PD treatment, while other participants stated that they had difficulties.

-P2: *"Of course, my adaptation to life is broken. I don't want to go out, I don't want to leave the house, I have itches. I think about my children and my future (with a sad face)."*

-P3: *"I didn't have a problem because I'm not that incompatible. Because I was always doing my brother's dressing. So, I didn't have a problem. I was conscious."*

-P5: *"I don't have any obstacle in adapting to life, thank goodness, I had to adapt. There are certain things you have trouble with, but you don't have to spoil your life."*

-P6: *"This disease started at a young age. My adaptation to life is broken, of course, I want to keep myself away from everyone and everything."*

Patient Opinions on Coping with Difficulties Category

Participants expressed their coping with difficulties as follows:

-P1: "*I'm trying to do it with what I have. Sometimes I talk to my wife. Sometimes I get angry and go out. I talk to myself and think about what to do, where to enter and where to leave. I bargain by myself. If I didn't think about it today, I wouldn't smoke. What happens if I don't smoke, my life starts to be balanced and orderly."*

-P5: *"I have not tried any method. I pray when I go to bed. I pray when I am at the mosque. It's been twelve or thirteen years, I'm getting used to it. I have to accept. I don't have a chance to refuse."*

Patient Opinions on the Category of Needed Support to Cope with Difficulties

The participants explained that they wanted to receive financial resources and government contributions, as well as family contributions, and transplant requests from people, and they wanted to be listened to and receive support on these issues.

-P2: *"I'm waiting for a transplant to come out. What more would I want if there was such support?"*

-P3: *"I did a lot of research to lose weight. If I had the financial resources, I would also go to sports. I go to all kinds of dietitians (laughs)."*

-P5: *"Everyone has their own trouble. Since my government report is 90% working, it doesn't pay for maintenance. There is the Ministry of Family and Social Policies (Researcher: Yes). We went there too, they said you can see your own business and we couldn't get support. We would like to get support from the government, I would like to be listened to and share my troubles more than my relatives."*

-P6: *"I am far away from my family and relatives, I want them to listen to me and support me. I wish there was financial support, money shortage is another problem (with a sad facial expression)."*

DISCUSSION

As a result of the study, it was determined that the participants had problems in physical activity, social life, family relations, physical appearance, professional and sexual life after PD treatment.

In the present study, it was determined that starting

the PD treatment created sadness and stress in individuals. In the study of Sadala et al. (2010), individuals felt anxiety and hopelessness when they first learned about the disease and stated as "*It seemed like the end of the world, you know? It was like… my God! The ground under my feet seemed to have disappeared*." This result supports our study. The feeling of the unknown in individuals and the thought of losing control of their lives in the treatment of PD are considered as the reasons for experiencing these feelings.

The majority of the participants in the study explained that PD means "*living*" for them. Fex et al. (2011) found in their study that PD contributes to living by giving individuals flexibility and confidence. In the study of Petersson and Lennerling (2017), patients stated that PD is necessary for them to continue living their lives. Results similar to the literature suggest that patients are conscious that they need to practice PD to live.

In this study, all of the participants who applied PD stated that they described not being able to walk, slowing down, straining in physical activity, and that they had skin problems in physical appearance and problems with the catheter. Moreover, the participants stated that they could not visit their friends in social life, they had difficulty going out of the house, but they could go out at certain times, their families supported them, but they were distanced from their close relatives. When the literature is examined, there are many studies show that peritoneal dialysis affects patients' family relationships, daily and social life, physical activities and physical changes (Duran and Güngör, 2015; Karaca et al., 2012; Peker, 2007; Tong et al., 2013; Tannor et al., 2017). In the study of Tannor et al. (2017), a female patient who applied PD expressed her thoughts about her social life as "*I have to worry when I go out*". Another female patient expressed her opinion as "*It limits you, it limits you to your home*". Again, the female patient who applied PD explained her thoughts about the catheter as "*It is not something I always want to look at every day, it really limits you*". In the work of White and Grenyer (1999), the support of the spouse in daily life in family relations was emphasized. The female patient said, "*My husband is very kind and I couldn't have done without him. He is there for me when I need help making the bed*". In the study conducted by Yngman-Uhlin et al (2010), one participant expressed her/his thoughts on housework as "*I give up doing housework due to fatigue and this contributes to stress*". This finding is in parallel with the thought of P3. In the study of Martin-McDonald and Biernoff (2002), one of the participants said, "*Many friends have left us. We don't see many friends that we see on a regular basis, and I think it's because they can't be around someone who is chronically ill*." All these findings support our study and the statements of the participants in this study are included in the results section with direct quotations. In the literature and at the end of the study, changes in physical activity in PD patients negatively affect the patients in their social and daily life and family relationships.

In the present study, two of the participants stated that they had to quit their job in their professional lives after the PD treatment. Especially in male patients, the initiation of PD at a young age and the loss of jobs negatively affected their lives. In the study of Tannor et al. (2017), the male patient who applied PD expressed his thoughts about his professional life, "*If you have peritoneal dialysis, you cannot find a job. People do not want to employ you*". The female patient who applied PD expressed her opinion as "*They do not provide a place for us as kidney patients in the workplace*." In another study, the patient's expression was "*I worked for a company for more than 20 years and suddenly I was like a piece of paper in the wind*" (Davison, 2006). All these findings are in parallel with the results of our study. At the same time, in Peker's (2007) study, it was stated that the professional life of 1/3 of the patients was adversely affected. Similarly, as a result of the study by Karaca et al. (2012), 1/3 of the patients stated that "*It has become very difficult to go to work*". After the PD treatment, individuals lose their jobs and workplaces cannot provide a suitable environment for patients. This situation affects the patients negatively and causes them to have financial difficulties.

In our study, P5 stated that after PD treatment, his sexual life was over and there were missing things, P3 stated that the frequency of sexual intercourse

decreased and she had difficulty during sexual intercourse, her sexual desire decreased, P6 did not get pleasure, sexuality puts her under stress, and P4 stated that he had an erection problem. In parallel with these results, in the study of Tannor et al. (2017), the female patient who applied PD stated her thoughts on sexual life as "*I can't have sex the way I used to have sex, this is no longer the same thing*". In the study of Yılmaz and Özaltın (2011), the patient's thought that "*We are like brothers and sisters, our sexual life is over*" supports our study. As a result of the descriptive studies, it was determined that the patients who applied PD experienced problems in sexual arousal, orgasm status and orgasm satisfaction. All these results support our study (Yılmaz and Özaltın, 2011; Pyrgidis et al., 2021; Abdelaal et al., 2021). With the PD treatment, individuals experience deficiencies in their sexual lives. The physical changes brought about by the disease cause a decrease in sexual desire and can bring sexuality to the endpoint with sexual dysfunctions.

After the PD treatment, the participants considered the most difficult situations in their lives at many points. To cope with these difficulties, half of the participants stated that they took refuge in their beliefs and tried to lose weight. The other coping methods used were accepted as being uneasy, getting used to, talking to the spouse, getting angry, bargaining with oneself, patience, using the opportunities at hand, and smoking. The belief system used to cope with difficulties has been the most frequently used coping method in many studies, as in our study (Çetinkaya et al., 2008; Hiçdurmaz and Öz, 2009; Duran and Güngör, 2015). It was determined that the patients used both positive and negative coping methods in the difficulties they encountered with the introduction of PD practice into their lives.

Living with chronic kidney disease is associated with hardships for patients and their care-partners (Kalantar-Zadeh et al., 2021). The biggest supporters of the participants in the study were their spouses. In the study of Ekelund and Andersson (2010), a participant's thought about spousal support family burden "*Illness is a burden for my wife. She takes care of everything*". This finding is parallel to our study. In the present study, the patients stated that the support of their spouses was high, but they were upset by the lack of support from family relatives or outside about transplantation. Most of the participants stated that they wanted to receive financial and government support in terms of getting support for the difficulties after the PD treatment. In the present study, patients experience great financial difficulties because they lost their jobs or moved to lower-level jobs. Participants stated that they could not receive care support from the government because they were able to work, but they had difficulties in finding a job, their physical activities slowed down, and the unavailability of the workplace where they would do PD process.

After the PD treatment, individuals stated that they experienced problems in terms of physical movement, sexual function, social and family relations, professional life, and most of all as financially. In the face of these difficulties, all the participants stated that they wanted to receive family, financial and government support. In line with these results, the necessary procedures should be initiated for establishing counseling centers that can provide psychosocial support for sexual, occupational and daily life, physical activity, physical appearance, nutrition, coping with difficulties, sleep patterns, family relations. Moreover, establishing psychoeducational programs and providing financial support from the government are recommended for patients who started PD treatment.

Limitations

In this study, opinions of people living in a certain region were taken. Study results are limited to expressions specific to this region.

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Conflict of Interest

No conflict of interest has been declared by the author(s).

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Research Article

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Nasal Obstruction, Quality of Life and Comfort Level in Septorhinoplasty Patients: Six-Monthly Monitoring Study

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ABSTRACT:
Purpose: The purpose of the study is to determine the nasal obstruction, quality of life, and comfort level before and after surgery in the 6th month in patients who underwent septorhinoplasty.
Material and Methods: The study was carried out as a pretest-posttest to determine the nasal obstruction, quality of life, and comfort level in 161 patients who underwent septorhinoplasty. Research data were collected using the Nasal Obstruction Symptom Scale, Rhinoplasty Quality of Life Scale, and Visual Analog Scale. Median, standard deviation, number, percentage, Wilcoxon Signed-Ranks test, and Spearmen correlation tests were used.
Results: The Nasal Obstruction Symptom Scale score of the patients was 70.12±27.71 preoperatively decreased to 22.98±21.40 in the 6th month postoperatively, the Rhinoplasty Quality of Life Scale score increased from 18.68±10.06 to 70.78±19.10, the comfort level increased from 3.03±1.57 to 7.32±1.69.
Conclusion: The respiratory function of the patients improved, and the patient comfort and quality of life increased after septorhinoplasty. The evaluation of respiratory function, quality of life, and comfort level after septorhinoplasty will contribute to the planning of education and counseling interventions for patients and the effective management of postoperative home care.
Keywords: *Nasal Obstruction, Quality of Life, Septorhinoplasty*

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INTRODUCTION

Septal deviation is a problem that results in a decrease in the quality of life (QoL) and comfort of individuals (Oppermann et al., 2022). Nasal obstruction related to septal deviation causes impairment in respiratory and odor function, headache, fatigue, insomnia, anxiety, depression and decreases productivity and, affects the body image (Ma et. al., 2020; Oppermann et al., 2022; Taylan et al., 2021; Valsamidis et al., 2019). Septorhinoplasty is performed to improve the function and appearance of the nasal area and facial characteristics, to perform nasal functions, and to increase the comfort of life (Cingi et al., 2011; Ishii et al., 2017; Kütük and Arıkan, 2019; Oppermann et al., 2022). Although the surgical technique and complication rates are the priority in evaluating the results of the operation in septorhinoplasty surgeries, in recent years, importance has been given to the evaluation of surgical outcomes from the patient's perspective (Dabrowska-Bien et al., 2021; Izu et al., 2012). The QoL and nasal obstruction after septorhinoplasty are the most commonly evaluated issues from the patient's perspective in septorhinoplasty surgeries and it was determined that patients reported significant improvement in respiratory function and QoL (Çelik and Altıntaş; 2019; Gerecci et al., 2019; Kalakuntla et al., 2019;

Kütük and Arıkan, 2019; Oppermann et al., 2022; Spiekermann et al., 2018; Wähmann et al., 2018; Zojaji et al., 2018). Determination of the symptoms and QoL of patients after surgery using measurement tools specific to the disease is important in preventing possible complications and increasing patient satisfaction, QoL, and comfort (Çelik and Altıntaş; 2019; Gerecci et al., 2019; Oppermann et al., 2022; Wähmann et al., 2018; Zojaji et al., 2018). There are studies evaluating the effects of septorhinoplasty on quality of life (Bulut et al., 2017; Chavan et al., 2017; Oppermann et al., 2022; Wähmann et al., 2018; Zojaji et al., 2018) and nasal obstruction (Oppermann et al., 2022; Taylan et al., 2021) and comfort (Taylan et al., 2021). However, no study was detected that simultaneously evaluates the effects of septorhinoplasty on quality of life, nasal obstruction, and comfort with measurements pre- and postoperatively. Therefore, this study was carried out to determine the nasal obstruction, QoL, and comfort level specific to the disease before and after surgery in the 6th month in patients who underwent septorhinoplasty.

MATERIAL AND METHODS

Purpose and Type of Study

The study was carried out as a pretest-posttest to determine the nasal obstruction, QoL, and comfort level specific to the disease in patients who underwent septorhinoplasty before and after surgery in the 6th month.

Sampling and Participant

The sample size was determined by using the power analysis technique with the G*Power software (G*Power V 3.1.3 Franz Faul, Universität Kiel, Germany) (Faul et al., 2007). Given the study a power of 0.98, it was calculated that at least 161 participants were required. Therefore, the sample included all patients (n = 200) who underwent elective septorhinoplasty by the same surgeon due to septal deviation between 1 April 2019 and 1 October 2019 in the Otorhinolaryngology service of a university hospital. Patients over 18, who were cognitively competent and agreed to participate in the study were included in the study. Patients with reduced polyps or chronic sinusitis, craniofacial anomalies, patients with active upper respiratory tract infection, and patients under 18 and over the age of 60 were excluded from the study.

The study was carried out with 161 patients since the phone number given to 20 of the 200 patients included in the study could not be reached during the posttest monitoring in the 6th month and 19 patients wanted to leave the study.

The data were collected by the second researcher using a face-to-face interview method. Preoperative data were collected in the patient room at 21:00 the day before the operation, and the phone number of the patients and the date of the interview were recorded. For posttest evaluation, the patients were called 6 months after the operation and were called to the polyclinic for examination. NOSE, ROE, and VAS were applied to the patient again after the examination. The surveys took 20-25 minutes to complete

Data Collection Tools

Descriptive Characteristics Form, Nasal Obstruction Symptom Scale (NOSE), Rhinoplasty Quality of Life Scale (ROE), and Visual Analog Scale (VAS) were used to collect data.

Descriptive Characteristics Form: Form was developed by researchers based on the literature (Çelik and Altıntaş, 2019; Gerecci et al., 2019; Oppermann et al., 2022; Wähmann et al., 2018; Zojaji et al., 2018). It consists of seven questions regarding age, gender, place of residence, marital status, educational status, employment status, and the basic problem related to the nose.

NOSE: NOSE was developed by Stewart et al. in 2004, and the Turkish validity and reliability test were made by Karahatay et al. in 2018. In NOSE, the patient's symptoms such as swelling in the nose, breathing difficulties in the nose, difficulty in sleeping, and inability to breathe sufficiently through the nose during exercise or fatigue are evaluated. The raw values obtained here and ranging from 0 to 20 are multiplied by 5 to score between 0-100. High scores show excessive nasal obstruction (Karahatay et al., 2018). Total NOSE scores have been categorized into previously described severity ranges including mild (range, 5–25), moderate (range, 30–50), severe (range, 55–75), or extreme (range, 80–

100) (Gerecci et al., 2019). Cronbach's alpha values for the scale were found to be 0.78 in the study of Stewart et al. and 0.86 for the pretest, and 0.81 for the posttest in the study of Karahatay et al. (2018). In our study, Cronbach's alpha value was 0.92 in the pretest and 0.96 in the posttest.

ROE: ROE was developed by Alsarraf et al. in 2001 and the Turkish validity and reliability test were carried out by Çelik and Altıntaş in 2019. It is a scale consisting of standardized six questions and evaluated between 0 to 4 to determine the level of satisfaction with functional and aesthetic results of patients undergoing external nasal reconstruction. The score of the scale is between 0-24, the total score obtained is divided by 24 and multiplied by 100. The high score shows that patient satisfaction with nasal surgery is high (Kütük and Arıkan, 2019; Çelik and Altıntaş, 2019). Cronbach's alpha values for the scale were found between 0.57-0.81 in the original study. Cronbach's alpha values were 0.89 for the pretest and 0.80 for the posttest in Çelik and Altıntaş's study. In our study, Cronbach's alpha values were 0.703 in the pretest and 0.93 in the posttest.

VAS: VAS was developed in 1983 by Price et al. for chronic and experimental pain. The comfort level of the patients was evaluated using the visual analog scale (Chooi et al., 2013; Miu et al., 2019; Tosun et al., 2015). 0 means minimum comfort 10 means maximum comfort, and a high score shows a high comfort level. In our study, Cronbach's alpha values were 0.71 in the pretest and 0.78 in the posttest.

Statistical Analysis

The data were evaluated via the SPSS 22.00 program. Median, standard deviation, number, and percentage were used as descriptive statistical methods to evaluate the data. Normal distribution data was examined using the Kolmogorov-Smirnov test. Since the data was inconsistent with the normal distribution, the Wilcoxon Signed-Ranks test was used for statistical significance and relationships between variables, and Spearmen's correlation test was used to determine the relationship between preoperative and postoperative NOSE, ROE, and VAS scores. The statistical significance level was accepted as $p<0.05$.

Ethical Approval

The study was approved by the Non-Interventional Research Ethics Committee of Sivas Cumhuriyet University (2019-02/44, 20.02.2019) and written permission was obtained from the institution where the research was conducted. Verbal and written consent was obtained from the participants and confidentiality, privacy, and anonymity of the participants were ensured.

RESULTS

The mean age of the participants was 27.48 ± 8.14, 60.2% were women, 54% were university graduates, 67.1% were single, 93.8% were living in the city and 59.6% were not working. It was determined that 65.2% of the individuals had nasal breathing problems, and 34.8% were uncomfortable with deformities (Table 1).

In the preoperative period, patients had severe nasal obstruction, quality of life and comfort level were lower. The patients' preoperative NOSE score decreased from 70.12 ± 27.71 to 22.98 ± 21.40, the QoL score increased from 18.68 ± 10.06 to 70.78 ± 19.10, and the comfort level increased from 3.03 ± 1.57 to 7.32 ± 1.69, the differences between the scale scores in the preoperative period and the 6th month were significant (Table 2).

The preoperative NOSE score was strongly correlated with the comfort level (r = -0.532; P < 0.001), and weakly negatively correlated with the ROE score (r = -0.210; P = 0.007), and the comfort level was positively correlated with the ROE score (r = 0.443; P < 0.001). Postoperative NOSE score was negatively weak correlated with the comfort level (r = -0.275; P < 0.001) and was negatively strongly correlated with the ROE score (r = -0.657; P < 0.001), the comfort level was positively correlated with the ROE. It was determined that the comfort level was a positively strong relationship with the ROE score (r = 0.887; P < 0.001) (Table 3).

Table 1. Descriptive characteristics of individuals

Characteristics	n	%
Gender		
Female	97	60.2
Male	64	39.8
Education Status		
Primary school	6	3.7
High school	68	42.2
University	87	54.0
Marital Status		
Married	53	32.9
Single	108	67.1
Place of Residence		
Rural	10	6.2
City/Urban	151	93.8
Employment Status		
Working/employed	65	40.4
Unemployed	96	59.6
Basic problem related to the nose		
Nasal breathing problems	105	65.2
Uncomfortable with deformities	56	34.8

Table 2. Preoperative and postoperative NOSE, ROE, and VAS comfort score means of the participants in the 6th month

	Preoperative Mean (±SD)	**Postoperative** Mean (±SD)	**Test**
NOSE	70.12±27.71	22.98±21.40	p<0.001
ROE	18.68±10.06	70.78±19.10	p<0.001
VAS Comfort level	3.03±1.57	7.32±1.69	p<0.001

Wilcoxon Signed-Ranks test, NOSE, Nasal Obstruction Symptom Scale, ROE, Rhinoplasty Quality of Life Scale, and VAS, Visual Analog Scale

Table 3. Correlation of the participants' preoperative and postoperative NOSE, ROE, and VAS scores in the 6th month

		Precomfort	**Postcomfort**	**PreROE**	**PostROE**	**PreNOSE**	**PostNOSE**
Precomfort	r	1	0.281	0.443	0.010	-0.532	-0.275
	p		**0.000**	**0.000**	0.896	**0.000**	**0.000**
Postcomfort	r		1	0.194	0.887	-0.242	-0.726
	p			**0.014**	**0.000**	**0.02**	**0.000**
PreROE	r			1	0.097	-0.210	-0.195
	p				0.227	**0.007**	**0.013**
PostROE	r				1	-0.074	-0.657
	p					0.351	**0.000**
PreNOSE	r					1	0.410
	p						**0.000**
PostNOSE	r						1
	p						

Spearmen's correlation test

DISCUSSION

Septal deviation is a problem that can cause impairment in respiratory function, nasal congestion, and sinus infections by reducing the oxygen passage (Taylan et al., 2021). In studies conducted on patients with septal deviation, it is stated that patients commonly experience respiratory problems and their NOSE score is high

(Bulut et al., 2017; Cingi et al., 2011; Gerecci et al., 2019; Valsamidis et al., 2019). In a study by Oppermann et al. (2020), it was found that 88% of the patients experienced nasal obstruction symptoms and functional and aesthetic nasal complaints. In this study, 65.2% of the patients had strong breathing due to septal deviation, the preoperative NOSE score was high and patients had severe nasal obstruction. These findings obtained from our study support the literature and show that patients experience significant impairment in respiratory function related to septal deviation.

Septal deviations cause problems such as nose bleeding, snoring, insomnia, fatigue, headache, and decreased productivity besides impaired respiratory function (Ma et al., 2020; Taylan et al., 2021). These problems may negatively affect the life of the patients and result in a decrease in the QoL (Taylan et al., 2021). In studies evaluating the quality of life in septorhinoplasty patients, it has been reported that the preoperative quality of life of the patients is significantly lower (Bulut et al., 2017; Chavan et al., 2017; Oppermann et al., 2022; Wähmann et al., 2018; Zojaji et al., 2018). In our study, it was determined that the QoL of the patients was low according to the preoperative ROE score and that there was a weak and negative statistically significant correlation between the preoperative NOSE and ROE scores. These findings obtained from our study show that the nasal obstruction experienced by the patients due to septal deviation negatively affects the QoL and the importance of planning the required interventions to improve respiratory function.

Comfort, which is one of the basic human needs, is a goal that human beings have sought and wanted to achieve from birth (Büyükünal et al., 2018). Comfort is also an important component of patient satisfaction and QoL (Arslankılıç and Göl, 2020). Septal deviations are problems that negatively affect patients' comfort levels and QoL (Taylan et al., 2021). In the study by Taylan et al. (2021), it was found that preoperative comfort level is low, NOSE score is high, and NOSE score is an important determinant of comfort level in individuals with septum deviation. In this study, the patient's preoperative comfort level was low, and the comfort level was positively correlated with the preoperative ROE score and negatively correlated with the preoperative NOSE. These results show that similar to the literature, nasal obstruction is an important factor affecting patient comfort.

In studies comparing patients' preoperative and postoperative nasal obstruction levels, it has been reported that the nasal obstruction severity of the patients decreased significantly after septorhinoplasty (Gerecci et al., 2019; Ishii et al., 2017; Kütük and Arıkan 2019; Spiekermann et al., 2018). In the study of Gerecci et al. (2019), it was determined that the NOSE score of patients who underwent septorhinoplasty was 71.4 before surgery and decreased to 24.2 in the third postoperative month. In the study of Spiekermann et al. (2018), it was determined that the NOSE score, which was 60 preoperatively, decreased to 20 in the 12^{th} postoperative month. In the study of Kütük and Arıkan (2019) on patients who underwent rhinoplasty, it was determined that the NOSE score of the patients at the 1^{st}, 3^{rd}, and 6^{th} months after surgery decreased significantly. In our study, it was determined that the NOSE score, which supports the literature, significantly decreased in the 6^{th} postoperative month, from 70.12 to 22.98.

Apart from improving respiratory function, septorhinoplasty is an effective treatment method that increases the QoL and comfort level of the patient, positively affects the visual appearance of the individual, and reduces other symptoms such as headache, nose bleeding, and decreased productivity (Taylan et al., 2021; Wähmann et al., 2018). Evaluating the long-term results of septorhinoplasty in the studies, it was found that patients reported a decrease in their symptoms associated with septal deviation and a significant increase in their QoL (Bulut et al., 2017; Chavan et al., 2017; Cingi et al., 2011; Wähmann et al., 2018) and comfort level (Taylan et al., 2021). In the study of Taylan et al., in which they compared the nasal obstruction and comfort level before and after surgery in septorhinoplasty patients, it was determined that the comfort level of the patients increased significantly. Kalakuntla et al. (2019) also found that the QoL of patients increased significantly after septorhinoplasty. Bulut et al. (2017) found that

patient satisfaction increased by 28.7% in the 1st year after rhinoplasty and 35.3% in the 5th year. In the literature review by Wähmann et al. (2018) and Zojaji et al. (2018), evaluated the QoL after rhinoplasty, it was determined that the QoL life after rhinoplasty increased significantly. In our study, it was found that the ROE score, which was 18.68 ± 10.06 before surgery, increased to 70.78 ± 19.10 in the 6th month after surgery. This finding obtained from our study shows that similar to the literature, septorhinoplasty provides a significant improvement in the QoL of patients. This result may be related to the improvement of nasal obstruction.

There are some limitations in the study. The limitations of the study are that the study was conducted in a single center, and the monitoring was limited to only the 6th month. Second, only one follow-up was made with the patients. The strengths of the study are the large sample size and the evaluation of patients in three different dimensions such as nasal obstruction, quality of life, and comfort with three scales.

CONCLUSION

This study determined that septal deviation caused a decrease in the patient's respiratory function, QoL, and comfort level, and an improvement in the respiratory function of the patients in the 6th month after septorhinoplasty. It was also found that the comfort and QoL of patients increased significantly. Surgical nurses should determine the respiratory function, QoL, and comfort level of the patients before and after the surgery, and interventions that will increase the quality of life and comfort level of patients should be planned. Also, it is recommended to plan multi-center studies involving more patients and repeated measurements.

Conflict of Interest

There are no potential conflicts of interest.

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Determination of Nurses' Self-Confidence and Anxiety Levels in Clinical Decision Making During Covid-19 Pandemic

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ABSTRACT:

Purpose: This study was conducted to determine the self-confidence and anxiety levels of nurses in clinical decision-making in the Covid-19 pandemic.

Materials and Methods: This descriptive-cross-sectional study was conducted with nurses working in a state hospital. "Sociodemographic Data Collection Form" and "Nurses' Clinical Decision Making Self-Confidence and Anxiety Scale" were used to collect the study data. The snowball method was used to collect study data. The online data collection form was shared on social media and 449 nurses who voluntarily participated in the study and filled the scales completely and filled out the questionnaire were asked to share the questionnaire on their social media.

Results: 49,7% of the nurses who participated in the study were between the ages of 18 and 28,72.4% were women, 50,1% were single, 69,0% were graduates of the language, 70,2% were trained in Covid-19, 71,0% were cared for or diagnosed with Covid-19, and 79.5% were not diagnosed with Covid-19. The score they received from the anxiety sub-scale was 57,65±25,81 and the average score from the self-confidence sub-scale was 108,27±27,34. Itex plains 5% of the anxiety levels of nurses' self-esteem in clinical decision-making and increased self-confidence in clinical decision-making reduces anxiety level by 0,224 times.

Conclusion: During Covid-19 pandemic, it has a signafintly effect on the anxiety levels of nurses' self-esteem in clinical decision-making. Inaddition, it was found that as the Professional workingy earincreases, it has a statistically significant effect on the self-confidence level.

Keywords: *Covid-19, Anxiety, Nurse, Clinical decision making, Self confidence*

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INTRODUCTION

Nurses have many roles and functions in the clinical field (Toru, 2020). The roles of nurses can be listed as caregiver, researcher, manager, educator, decision-maker, advocate, comforter, and therapeutic (Aydemir, 2022). Nursing requires a cognitive decision-making process that provides an accurate understanding of the problem of the healthy-sick individual and the selection of optimal nursing behavior (Yoo et al., 2019). Correctly applied good clinical decision-making skills increase the quality of care, reduce the number of medical errors, reduce the cost of care and treatment with more efficient use of resources, and thus increase both patient satisfaction and nurse motivation (Günerigok et al., 2020). There are some barriers to clinical decision making. Self-esteem and anxiety are two of the most important. It has also been reported that low self-esteem and high anxiety prevent clinical decision-making processes and create emotional barriers (Espinosa Rivera, et al.2019). The reasons why nurses have sufficient self-confidence and low level of anxiety in clinical decision-making processes may be related to their experiences, having sufficient

knowledge about the subject and being open to learning (Espinosa-Rivera et al., 2019). It has been reported that clinical decision-making skills can be supported by increasing the metacognitive awareness of nurses (Bektas, et al. 2021). It is reported that the characteristics of the decision-making environment also affect the decision process of nurses (Phillips, et al., 2019). Although nurses are the most patient-oriented role in the Covid-19 pandemic process, they work at the forefront (Çevirme and Kurt, 2020). Nurses, who are primarily involved in patient care during the pandemic process, experience physical-psychological-social difficulties due to long and fast-paced work (Özden et al., 2018). Working in high-risk areas and contact with infected people is one of the common causes of anxiety, depression and stress (Polat and Çoşkun, 2020). Clinical decision-making skills are very important for professional nurses in this period when the disease is severe. Because nurses are with patients much more than other members of the multidisciplinary team. Often patients are the first to see clues that may warrant clinical decision making. Lack of self-esteem and high levels of anxiety affect clinical decision making, resulting in emotional barriers to clinical decision making (White, 2014). From this point of view, the research was conducted to determine the self-confidence and anxiety levels of nurses in clinical decision-making processes during the Covid-19 pandemic.

METHOD

This study was conducted in a descriptive design in order to determine the levels of self-confidence and anxiety of nurses in the clinical decision-making process during the Covid-19 pandemic.

Sample: Snowball method was used to collect the study data. The online data collection form was created and those who filled out the survey were asked to share the survey on their social media (Facebook, Twitter, Watsapp... etc.). The research sample consisted of 449 nurses who agreed to participate in the survey sent online on 10-17 January, 2021, where the research data were collected, and filled out the survey without attachment.

Data Collection Tools: The study data was collect by using Sociodemographic Form which was prepared by the researchers and which included socio-demographic characteristics such as age and gender of the nurses and "Clinical Decision Making Self-Confidence and Anxiety Scale in Nursing". The NASC-CDM scale, developed by White (2014) in the United States, is designed to assess nurses' perceptions of their self-confidence and anxiety levels during the clinical decision-making process. The scale is appropriate for both student and clinical nurses. Bektas et al. (2017) conducted a validity and reliability study on the scale, reporting Cronbach-Alpha coefficients of .97, .96, .89, and .91 for self-confidence and anxiety sub-dimensions, respectively. This study similarly found high Cronbach-Alpha values for the self-confidence sub-dimension (.88) and the anxiety sub-dimension (.92). The scale features a 6-point Likert-type response format with 27 questions. Self-confidence and anxiety are the two subscales, each with three sub-dimensions: "Using resources to collect information and listening carefully" (13 items), "Using information to see the big picture" (7 items), and "Knowing and acting" (7 items). The first sub-dimension focuses on utilizing resources such as family, instructors, and literature to gather information, as well as active listening and interpreting verbal and nonverbal cues. The second sub-dimension emphasizes identifying patterns in assessment data and determining the relevance of information based on prior experience and knowledge. Nurses can then interpret the data and see the big picture. The third sub-dimension includes analyzing the risk versus benefit of actions in each situation, selecting the best option, and using intuition for decision-making. Scores on the NASC-CDM scale range from 27 to 162, with no cutoff value. High scores indicate high levels of self-confidence and anxiety, while low scores indicate low levels of self-confidence and anxiety. Nurses complete the scale themselves.

Data Analysis: Data were evaluated by using SPSS (Statistical Package For Social Sciences) 22.0 package program. For data analysis, values, averages, number and percentage were used. T test was performed in

the examination of bilateral independent groups and groups with normal distribution, and Mann Whitney U test was performed in groups that did not show normal distribution; Kruskall Wallis test was used in more than two independent groups and normal dispersed groups, one-way Anova, more than two independent and normal non-dispersing groups. Findings in the 95% confidence range and p<0.05 significantness level were evaluated.

Ethical Consideration: Written permission from the Ethics Committee of the Faculty of Nursing and written permissions were obtained from the nurses who participated in the research in order to conduct the research.

FINDINGS

Of the 449 nurses who participated in our study, 49.7% were between the ages of 18 and 28, 72.4% were female, 50.1% were single, 69.0% were language graduates, 70.2% received Covid-19 training, 71.0% cared for patients with suspected or diagnosed Covid-19, and 79.5% were not diagnosed with Covid-19.

Nurses between the ages of 18 and 28 had higher self-confidence scores (110.12±25.07) than other age ranges, men had higher self-confidence scores (110.62±29.77) than women, but the differences were not statistically significant (p>0.05). The average score of nurses with a working time of 20 years or more in the profession (109.64±31.89) is higher than that of nurses with other working years, and the difference is statistically significant (p<0.05). According to the average self-confidence score (110.45±26.11) of those trained on Covid-19 according to the average score of those who did not receive training (102.16±29.73), the mean score of those diagnosed with Covid-19 (108.2±29.01) was also found to be high compared to those who did not receive it, but the differences were not statistically significant (p>0.05). It was found that the average anxiety score of nurses aged 51 and over (73.23±37.42) was higher than other age ranges, while men's anxiety scores (62.93±31.71) were higher than those of women, but the difference was not statistically significant (p>0.05). The mean score of nurses with a working time of 20 years or more (68.35±37.35) was found to be higher than in other working years, but the difference was not statistically significant (p>0.05). The average anxiety score (56.79±25.34) of those trained on Covid-19 was found to be low compared to the mean score of those who did not receive training (59.29±26.65), but the difference was found to be statistically significant on anxiety levels (p>0.05). Those diagnosed with Covid-19 were found to have a high average anxiety score (64.56±30.73) compared to those who did not receive it, and the difference was statistically significant (p<0.05)(Table 1).

The total score average of the self-confidence is 108.03±28.26, the score average of the sub-size of "using resources to obtain information and listening fully" was 52.64±13.78, the score average of the "using the information at hand to identify the problem" lower size was 27.94±7.33, and the score average of the "knowing and acting" sub-dimension was 27.45±7.15. The total score average of the anxiety was 57.63±26.36, the score average of the sub-dimension of "using resources to obtain information and listening fully" was 27.23±12.82, the score average of the "using the information at hand to determine the problem" sub-size was 15.11±6.72, and the score average of the "knowing and acting" sub-dimension was 15.29±6.82 (Table 2).

Because the meaningfulness level is p<0.05, the established regression model makes sense. According to the results of the regression analysis for the exhaustion of the relationship; it is seen that nurses' self-esteem has a very negatively significant effect on their anxiety. The R^2 value expressed as the model's comment strength is calculated as 0.50 (R=.224, R2=.50;p<0.05). This value shows that the anxiety variable is explained by the 5% argument in the model as self-confidence. Beta coefficient of the argument included in the regression analysis .-283 (p<0.05). Accordingly, self-confidence has a significant effect on nurses' anxiety (Table 3).

Table 1. Comparison of Self-Confidence and Anxiety Subscale Score Averages with Sociodemographic Characteristics

Characteristics	n	%	Self-Confidence		Anxiety	
			X±SS	Test ve p	X±SS	Test ve p
Age						
18-28	223	49.7	110.12±25.07		54.94±23.65	
29-39	160	35.6	107.67±28.02	t=3.680*	56.10±22.47	t=7.393*
40-50	53	11.8	100.67±33.46	p=0.29	68.94±34.95	p=0.60
51 ve above	13	2.9	104.69±30.97		73.23±37.42	
Gender						
Female	124	27.6	106.96±26.52	t=-1.264	55.48±22.77	t=18222.5**
Male	325	72.4	110.62±29.77	p=0.38	62.93±31.71	p=0.11
Martial Status						
Married	225	50.1	107.27±26.22	t=-.542	29.86±26.37	t=22659.5**
Single	224	49.9	108.68±28.70	p=0.21	55.22±24.93	p=0.64
Having children						
None	70	15.6	108.83±27.52		54.40±22.96	
1	80	17.8	109.47±23.27	t=1.741***	60.41±26.59	t=6.400*
2	33	7.3	108.11±27.94	p=0.15	62.07±28.80	p=0.94
3 ve more	266	59.2	97.57±32.77		65.72±33.33	
Education Level						
High School	310	69.0	109.73±30.40	t=0.922***	65.00±36.49	t=1.532*
Undergraduate	32	7.1	102.89±29.27	p=0.43	64.47±34.14	p=0.67
Postgraduate	65	14.5	108.56±26.48		55.15±21.15	
Master Degree	42	9.4	110.28±29.25		56.81±26.63	
Duration of work						
1-10 year	325	72.4	109.42±25.59	t=3.221***	54.85±22.60	t=5.176*
11-20 year	76	16.9	100.72±31.26	**p=0.04**	62.19±27.32	**p=0.07**
20 -over	48	10.7	109.64±31.89		68.35±37.35	
Received Covid-19 training						
Yes	315	70.2	110.45±26.11	t=2.949	56.79±25.34	t=20289.5**
No	134	29.8	102.16±29.73	p=0.42	59.29±26.65	p=0.51
Caring patients with Covid 19						
Yes	319	71.0	108.52±27.43	t=0.663	57.50±24.70	t=19903.0**
No	130	29.0	106.63±27.64	p=0.46	57.63±28.20	p=0.50
Diagnosis with Covid-19						
Yes	92	20.5	108.2±29.01	t=0.089	64.56±30.73	t=14313.5**
No	357	79.5	107.91±27.10	p=0.59	55.70±23.97	**p=0.04**

*KW, ** MWU, ***ANOVA

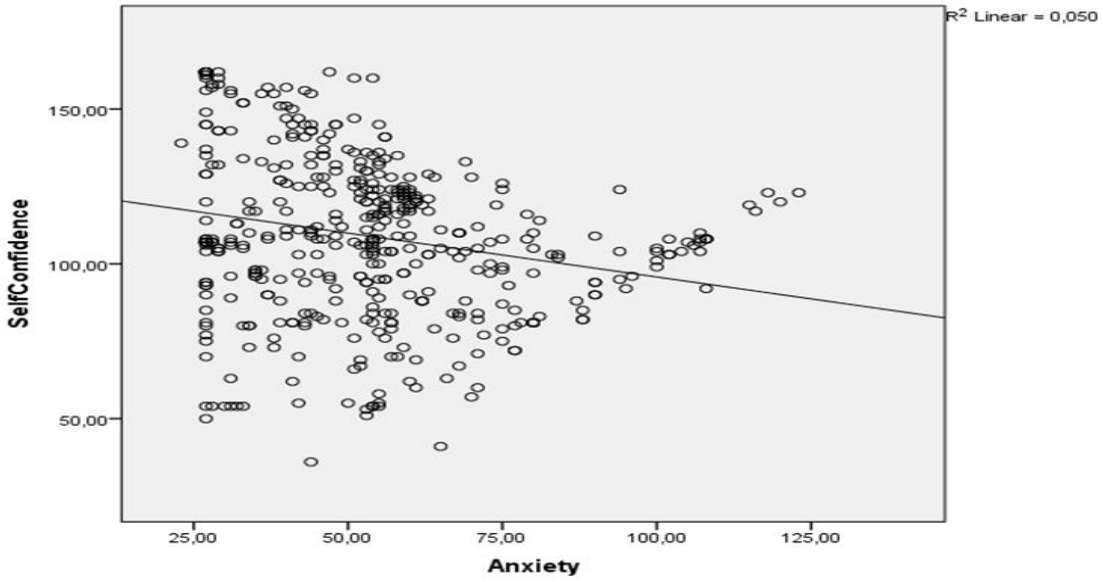
Table 2. Total sub-dimensions scores of self-confidence and anxiety

Sub-dimensions	Self-confidence X±SS	Anxiety X±SS
Use resources to obtain information and listen in fully	52.64±13.78	27.23±12.82
Use on-hand information to identify a problem	27.94±7.33	15.11±6.72
Knowing and acting	27.45±7.15	15.29±6.82
Total	108.03±28.26	57.63±26.36

Table 3. Regration Analysis of Self-Confidence and Anxiety

Independent Variable	Dependent Variable	B	SS	p	t	R	R^2	F	p
Self-Confidence	**Anxiety**	-.283	.058	.000	-4.86	.224	.050	23.63	.000

There was a very weak negative relationship between nurses' self-esteem score averages and anxiety score averages (r=-.224;p<0.00) (Graphic 1).



Graphic 1. Relationship Between Nurses' Self-Esteem Score Averages and Anxiety

DISCUSSION

In this study which aim was to determine the self-confidence and anxiety that affects the clinical decision-making of nurses struggling at the forefront of the Covid 19 pandemic, the total score average of nurses was 108.03±28.26 and the average total score of anxiety was 57.63±26.36. The increase in self-confidence supports nurses' ability to manage their roles and identify interventions and solve problems that focus on individual care when making decisions (Dziurka et al., 2022). Anxiety is common in nurses, since they have activities directly on the human, which causes a process of discomfort (Mohamadzadeh Tabrizi et al., 2022). There was no study in the literature investigating the levels of self-confidence and anxiety of nurses in clinical decision making during the pandemic process, and this study is the first study on the subject.

In order to increase professional qualification, it is important for nurses to develop their theoretical knowledge as well as their practical skills (Kalyani et al., 2019). In our study, it was determined that nurses between the ages of 18 and 28 have low self-esteem compared to nurses in other age groups. However, there is no study on the same subject in the literature, In a study comparing the relationship between self-esteem and anxiety in adults was found that in the 31-40 age range, it had higher self-confidence than other age groups, and the 25-30 age range had the lowest self-confidence. In our study, the anxiety level of nurses aged 51 and over was higher than other age ranges. In some study, it was found that nurses who did not work on the frontal side had higher psychological problems (Zhang et al., 2020). In our study, it can be said that the presence of high anxiety levels of over 51 considers themselves at high risk of infection and that high levels of health anxiety increase their anxiety. In addition, increased experience can be effective in reducing their anxiety with the work of young nurses at less risk of infenction in risky areas and exposure to one-on-one patients. In the literature, it is stated that gender directly affects decision-making (Schoeffer et al., 2022.). In our study, men's levels of self-confidence and anxiety in clinical decision-making during the pandemic process were high compared to women and no significant difference was found. In the literature (Öztürk, 2017) found that sex has no effect on self-esteem. A study by Kukulu and his friends (2012) on the self-confidence, gender

and academic success of nursing undergraduates found that male students had a higher level of self-esteem than female students (Kukulu et al., 2012). In the pandemic process, due to the status of women in society, the responsibilities that are burdened in home life as a result of working life may be a factor that reduces self-confidence. It can be considered that the high anxiety of men is due to the increased concern of protecting their families during the pandemic process.

As in any profession, self-improvement with education in the professionalism of the nursing profession requires its skill (Kazawa et al., 2022). In our study, it was determined that graduate graduates have high levels of self-confidence compared to other educational situations, while graduates of health vocational high schools have high anxiety. One of the important components of the concept of professional self is self-confidence. In a study by Ak et al. (2018) on the professional attitudes and influencing factors of nursing students, it was determined that the professional attitude score averages of the students who graduated from the health vocational high school were higher than those who graduated from anatolian high school and straight high school (Ak et al., 2018). A study by Holloway (2017) found that self-confidence in management, leadership and practice increases as the level of education increases (Holloway, 2017). In the study of Wilson and Johnson (2015), it was determined that the decision-making, problem solving information, communication, time management and self-confidence of nurses who had master's training increased(Wilson and Johnson, 2015). Clinical decision-making is an integral component of nursing practices and one of the nursing roles and a sub-element of all other nursing roles (López-Medina, et al., 2022). Since the educational situation of nurses in the pandemic process guides critical thinking, clinical decision making and problem solving skills, it can be said that our study is the reason for the increase in the self-confidence levels of graduate nurses.

The high period of professional experience has positive effects in terms of level of professionalism (Xue et al., 2023). Professionalization supports decision-making process, improving patient care quality and satisfaction (West et al., 2022). In our study, it was determined that nurses whose professional working time was 20 years and above in the pandemic process had high self-confidence compared to other working years and the difference was statistically significant. In addition, it was determined that the high anxiety levels of nurses with a working time of 20 years and above were not statistically significant compared to other working years. When we look at the literature, the study by Espinosa Rivera and his friends (2019) found that 69% of new nursing undergraduate graduates had a high level of self-confidence (Espinosa-Rivera et al.,2019). Merey (2010) compared the relationship between adult self-esteem and anxiety levels, and found that those in the first 5 years of the profession had lower self-esteem and higher anxiety than other year intervals, while those with a working year of 6-15 years had the most self-esteem and the least anxiety level (Merey, 2010). As the professional working year of nurses increases, the experience and intuition about existing patient profiles and results increases. Therefore, it may have positively affected self-esteem levels during decision-making, and a virus that has never been encountered before and patient was thought to increase anxiety levels in nurses with advanced occupational working years.

During the Covid 19 pandemic, nurses should be trained in many subjects of personal protective equipment, field disinfection, medical waste management and sterilization of patient care devices and management of occupational exposure (Huang et al., 2020). The best way to prevent the contagion of covid-19 virus is to know the ways of transmission, clinical features and clinical management of the disease (Demirağ, 2020). Nurses who think their knowledge is inadequate feel inadequate and this causes negative emotion situation changes. As the level of knowledge increases, it causes an increase in self-confidence level. In our study, nurses who received training on Covid-19 had low self-esteem and low anxiety, but no statistical difference was found. Nemati et al. (2020) in a study conducted to evaluate the knowledge, attitudes and behaviors of Covid-19-related nurses in Iran; 85.88% of nurses had accurate information about the source of the infection, while 14.12% did not have the correct

information and 56.5% had sufficient information(Nemati et al., 2020). Shi et al. (2020) in a study to assess the knowledge and attitudes of medical personnel at two Chinese mental health centres during the Covid-19 pandemic; 89.51% of the medical staff of the psychiatric hospitals studied had extensive knowledge of Covid-19, and 64.63% were found to have received training on the relevant subject in hospitals and had confidence in knowing how to protect themselves and their patients (Shi et al.,2020). As a result of our study and studies in the literature, it can be said that the training provided by hospitals and related organizations, prevention of infectious diseases, supporting the ability of nurses to obtain and use evidence-based information is effective in increased self-confidence level and decreasing anxiety.

As health workers are in constantly contact with patients during the Covid-19 pandemic, the risks of exposure to the virus increase and this situation causes fear and anxiety. In our study, it was determined that the anxiety level was high in nurses diagnosed with Covid-19 and the difference was statistically significant. In a study conducted by Li et al (2020) in the literature, health personnel were diagnosed with Covid 19 before their emotional state; 31.1% were found to be anxious, 20.4% were optimistic and only a few were found to be fearful or pessimistic, and 88.3% of staff experienced emotional changes such as stress and anxiety during psychological experience isolation periods after diagnosis (Li et al. 2020).

In the pandemic, it can be considered that the fear of having this disease and having its effects, infecting families by working in high-risk areas increases the level of anxiety. In another study conducted by Huang et al. (2020), a study among health professionals at the infectious disease hospital for Covid 19 found that nurses had a higher anxiety insedness than the doctor (Huang et al.,2020). Many nurses diagnosed with Covid 19 during the pandemic process may feel guilty for not working in the isolation process, and the fear that they may have brought the virus home and infected loved ones and family members, elderly parents, newborn babies and relatives with weakened immunity is thought to increase their anxiety.

CONCLUSIONS

It was found that nurses diagnosed with Covid-19 increased anxiety levels and had a negative impact on clinical decision-making ($p<0.05$). In addition, it was found to have a statistically significant effect on self-confidence level as the professional working year increased. Nurses need to determine what are the effects that will increase their self-confidence and reduce their anxiety in the working environment and should increase their competence by contributing to their professional knowledge and skills levels in aimed at increasing their self-confidence. Facing a new disease during the Covid-19 can reduce nurses' self-esteem. Lack of knowledge can increase the level of anxiety by causing deadlocks in problem solving and decision-making. Nurses undergoing Covid-19 are in critical areas and in one-on-one contact with patients, which can trigger fear of re-contracting this disease and cause an increase in anxiety. The previous study of this subject limitations the research and it is recommended to support this issue by conducting more extensive research on nurses.

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Evaluation of the Elderly Integrated Health Service Post Empowerment Program at the Somba Opu Health Center During the Covid-19 Pandemic**

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ABSTRACT:
Purpose: The purpose of this study was to evaluate the IHSPP program for the elderly that had been implemented in the working area of the Somba Upu Public Health Center during the COVID-19 pandemic.
Material and Methods: Material and Methods: This qualitative research was conducted from 7 to 11 March 2022 at the Somba Opu Health Center. The subjects in this study were Health center personnel and cadres as well as IHSPP targets with a total of 12 informants, each consisting of 5 health workers from Health center Somba Opu, 4 cadres and 3 elderly people. The instrument in this study used interview guidelines and documentation
Results: Effectiveness criteria in three components (Input, Process, and Output) can be said to be quite effective. For the efficiency criteria, it cannot be said to be efficient. For the Sufficiency criteria, it can be said to be sufficient because the materials used in the IHSPP for the elderly are sufficient to support the needs of the elderly. For the smoothing criteria, it can be said to be evenly distributed. The responsiveness criteria have been responded positively by the elderly. For the Accuracy criteria, it is right on target for the elderly aged 60 years and over.
Conclusion: Based on the result it can be concluded that in general it can be said to be good because in the implementation of the integrated service post program for the elderly, it has fulfilled several indicators both from input, process and output.
Keywords: *Evaluation, Elderly Integrated health service post Program, The COVID-19 Pandemic*

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INTRODUCTION

According to the Law of the Republic of Indonesia Number 13 of 1998 concerning the welfare of the elderly, what is meant byElderly (elderly) is someone who has reached the age of 60 years and over. The increasing number of elderly people in Indonesia brings both positive and negative impacts. Positive impact, if the elderly population is in a healthy, active and productive condition. On the other hand, the large number of the elderly population becomes a burden if the elderly have health problems which result in an increase in the cost of health services, a decrease in income/income, an increase in disability. The 21st century is a special challenge in the health sector from the continuously increasing number of elderly, namely the emergence of degenerative problems and non-communicable diseases. These diseases, will cause problems if not addressed or prevention is not done, because this will become a chronic and multi-pathological disease (Indonesian Ministry of Health, 2013).

The World Health Organization (WHO) noted, in the Southeast Asia region in 2013 the elderly population was 8% or around 142 million people. In 2050 it is

estimated that the elderly population will increase 3 times from this year. In 2010 the number of elderly people was 24,000,000 (9.77%) of the total population and in 2020 it is estimated that the number of elderly people would reach 28,800,000 (11.34%) of the total population. While in Indonesia alone in 2020 it is estimated that the number of elderly people will reach 80,000 people (Indonesian Ministry of Health, 2020).

The number of elderly population shows an increase from year to year. This is in line with the increasing life expectancy and is a sign of improving levels of community welfare. On the other hand, the increase in the elderly population results in an increase in degenerative diseases in the community. Without being balanced with promotive and preventive efforts, the resulting social burden and costs will be incurred for services. Health services will be quite large, one of the service facilities for the elderly is carried out through the Elderly Integrated Health Service Post Program (IHSPP). In 2016 the number of elderly people in Gowa Regency was 36,188 people and the coverage of elderly health services was 21.1% (Gowa District Health Office, 2017).

The problem that often occurs in empowering the elderly IHSPP is the lack of cadres because there are still many people who lack confidence and feel that they do not have the ability to provide health services to the elderly at IHSPP. Not only that, coaching for elderly IHSPP cadres is also still lacking due to the lack of human resources that can handle the problems of the elderly IHSPP in a certain puskesmas (Fitriahadi and Utami, 2020).

In addition, the inactivity of the elderly community is a problem in carrying out routine control at the IHSPP for the elderly and knowledge about the spiritual and mental is still lacking. And if the problem is not resolved, it will have an impact on the sustainability of the IHSPP for the elderly and will also affect the welfare and health of the elderly. (Fitriahadi and Utami, 2020)

The Integrated Health Service Post Program (IHSPP) for the elderly is the embodiment and implementation of development programs from government policies through health services for the elderly, as a communication forum in the form of participation of the elderly community, families, community leaders, and social organizations in the implementation, in an effort to increase the level of optimal health (Rusmin et al., 2017).

The Integrated Health Service Post Program (IHSPP) for the elderly was launched by the Indonesian government in 2010, specifically serving and handling various public complaints regarding health in the elderly. The program is intended so that elderly people who are susceptible to disease can live healthy, independent and efficient lives so they don't become a burden to their families and surrounding communities. Based on the Government Regulation of the Republic of Indonesia Number 43 of 2004 concerning Implementation of Efforts to Improve the Welfare of the Elderly. Social welfare is an integral part of the ideals of independence and the estuary of the economic development agenda. Efforts to improve the welfare of the elderly are carried out through a series of activities carried out in a coordinated manner, between the government and the community to empower the elderly so that they can carry out their social functions (PMK No.25).

So far, most people think that IHSPP is only important for toddlers and pregnant women. Because according to them, it is the toddlers and pregnant women who must pay attention to their development and health status. However, this is not the case, the aging process will have an impact on various aspects of life. Judging from the health aspect of increasing age, the elderly will be more susceptible to various physical and psychological complaints. For this reason, the government has provided health services for the elderly in the form of IHSPP for the elderly to pay attention to the health status of the elderly in Indonesia.

In implementing the Elderly IHSPP Program, they can participate in health services such as blood pressure, measurement of weight and height. and can get a free health check from a doctor at the Pucang Sewu Health Center. They can even get free medicines according to their complaints. In addition to being able to take part in health programs provided by the elderly, they can also take part in gymnastics activities held by elderly IHSPP cadres every week (Nilasari and Prabawati, 2018).

However, during this pandemic, the implementation

process needs to adapt to reduce the impact of COVID-19, as in the guidebook published by the Ministry of Health's Health Ministry that the implementation of the Elderly IHSPP is postponed and information on the delay is conveyed through the Puskesmas network. The IHSPP for the elderly can be held again if the situation is considered possible by taking into account the rules and orders of the Government, both central and regional, by implementing the protocol to prevent the transmission of Covid-19. During the postponement of the IHSPP for the elderly, optimizing the role of cadres in monitoring the health of the elderly by remote communication to the elderly or their families/elderly companions, for example WhatsApp or SMS (Director general of health services, 2020).

Based on the results of a study conducted by Nilasari and Prabawati, 2018, the Sekar Melati Elderly IHSPP includes an evaluation of the Welfare of the Elderly in which the evaluation criteria according to Dunn (1999) include six variables, including Effectiveness, Efficiency, Adequacy, Fairness, Responsiveness, and Accuracy. Data collection techniques used in evaluation research on the welfare of the elderly are interviews, observations, and documentation studies (Nilasari and Prabawati, 2018).

The essence of community empowerment through the elderly IHSPP program is to improve the social welfare of the elderly through community empowerment and provide convenience in obtaining social welfare services, increase the level of knowledge of elderly health through the elderly IHSPP and the factors that influence whether or not the implementation of the elderly IHSPP is running.

The Elderly IHSPP program is evaluated to determine the achievement of the program's objectives. The evaluation of the Elderly IHSPP Program is regarding the accuracy of program implementation and the implementation of the Elderly IHSPP Program is expected not only to be carried out once a month, but also twice a month. Where the target of this program is the elderly who need special attention regarding health checks. so that the expected goals and benefits can be felt by the elderly who follow the implementation of the Elderly IHSPP Program. This is the basis for the need for the elderly IHSPP and can be used as material to correct deficiencies for the activities of the elderly IHSPP in the future.

The Elderly Integrated Health Service Post Program (IHSPP) is evaluated to determine the achievement of the program's objectives. Evaluation of the IHSPP Program is regarding the accuracy of program implementation and the implementation of the IHSPP is expected not only to be carried out once in one month, but twice in one month. Where the target of this program is the elderly who need special attention regarding health checks. so that the expected goals and benefits can be felt by the elderly who participate in the implementation of the IHSPP Program. This is the basis for the need for the elderly Posyandu and can be used as material to correct deficiencies for the activities of the elderly Posyandu in the future. So, based on the background above, we are interested in evaluating the IHSPP program for the elderly that has been implemented in the working area of the Somba Opu Public Health Center.

MATERIAL and METHODS

Purpose and Type of the Study

The purpose of this study was to evaluate the posyandu program for the elderly that had been implemented in the working area of the Somba Upu Public Health Center during the COVID-19 pandemic.

Sampling and participant

This observation was carried out at the Somba Opu Health Center from 7 to 11 March 2022. The subjects in this study were Puskesmas personnel and cadres as well as the targets in the IHSPP with a total of 12 informants, each consisting of 5 health workers from the UPT Puskesmas Somba Opu. 4 IHSPP cadres and 3 elderly people.

Data Collection Tools

Sources of data used in this study are primary and secondary data, primary data collection in this study was carried out by in-depth interviews with informants related to the implementation of the IHSPP program for the elderly at Kumanis Health Center and supported by the results of observations and document reviews conducted by researchers. While the secondary data used is data from the results of recording and reporting on the health of the elderly at the Somba Opu Health Center.

Statistical Analysis

The instrument in this study used interview guidelines, observation forms and documentation. Data analysis by means of interview results which include input, process and output which are transcribed in written notes and grouped according to evaluation indicators according to Dunn (1999) to be analyzed then interpret in narrative and interpretation then compared with theories from various literatures or previous and similar research.

Ethical Approval

For research to be carried out, written permission received from the Gowa district health office, then the permit was disseminated to the Somba Opu Health Center to conduct observations related to the elderly integrated health service post empowerment program.

RESULTS

Primary data collection in this study was carried out by in-depth interviews with informants related to the implementation of the IHSPP program for the elderly at the Somba Opu Health Center and supported by the results of observations and document studies conducted by researchers. The characteristics of in-depth interview informants can be seen in the following table:

Tabel 1. Respondent characteristics

Informant Code	Name	Informant Subject	Education
TL	Nasraeni, S.ST	Lab Personnel	S1-Applied
TF	Agustini, S. Farm	Pharmacist	S1
TP	Megawati Baso, AMK	Nurses	D3
TPr	Hasnah, SKM	Promoter Power	S1
TPTM	Hj. Mustanah, SKM	Non-communicable disease power	S1
KD1	Samsiah	Cadre 1	junior high school
KD2	Novianti	Cadre 2	D2
KD3	Muliati	Cadre 3	senior High School
KD4	Rosnaeni	Cadre 4	senior High School
L1	With Juping	Senior 1	-
L2	Mardiana	Seniors 2	senior High School
L3	Hj. St. Arfa	Elderly 3	junior high school

INPUT

1. Power

The implementation of the Elderly IHSPP program at the Somba Opu Health Center requires an input, namely personnel, especially. On the input of energy, the existing staff must be in accordance with the required needs, quantity and capability. On the aspect of educational background, participating in self-development such as participating in training, and length of work. The results of the study show that the UPT Puskesmas Somba Opu has 8 IHSPP units, where each IHSPP unit has 5 health workers who coordinate and are responsible for the Elderly IHSPP program from the UPT Puskesmas Somba Opu, namely nurses, promoters, laboratory assistants, pharmacists, and PTM officers, and some of them have S1 and D3 educational backgrounds, such as AMK (Nurse), SKM (Promoter) S. ST (Laboran), S.Farm (Pharmacist), SKM (PTM Officer).

"Yes, PJP training is like long-term care" .....(TP)

Based on the results of interviews from informants, the number of cadres on duty at the IHSPP is 5 people in each elderly IHSPP, these cadres are very active in helping the elderly program run and paying attention to the presence of the elderly.

"This cadre is very active, he's the one who went to announce that the IHSPP is anyway, when the time comes, sometimes he's the one who weighs, but not forever...and basically the health workers get there, the place is neat, the table has been arranged, anyway we come just follow the activities." (TF)

Based on the results of interviews from one of the informants, it was found that the health workers of UPT Puskesmas Somba Opu had provided coaching

and training to cadres to support their knowledge and abilities.

“For the elderly, it is like training on non-communicable diseases such as training for hypertension, heart disease, and there are exercises for the elderly. Well.. a lot of activities” (Kd4)

2. Means

Based on the results of research conducted at UPT Puskesmas Somba Opu, Gowa Regency, it was found that the availability of facilities to support the IHSPP program for the elderly was not good enough. As for the facilities available at the Elderly IHSPP, namely only scales provided by each IHSPP originating from the kelurahan. So, in the implementation, there are still some facilities that are covered by the puskesmas such as stomach meter, Easy Touch GCU (Glucose, Cholesterol, Uric Acid), and also Hematology Analyzer (HA). However, the GCU examination strips are still lacking. In addition, infrastructure such as chairs and tables are provided by the cadres.

"At this time, those at the IHSPP, from the PTM manager, there are scales, the same that measures the circumference of the abdomen, so he usually does this every time he goes to the IHSPP, then from the lab examination, we have prepared from the PTM manager there is a tool for examination. blood sugar, uric acid and cholesterol, previously because there were none, we usually only checked Hb to ', So now we can check 4 parameters, Hb, Sugar, Cholesterol and uric acid. Now it's complete but we're limited to the strips that we have prepared too little, so usually there are still a few patients who want to have it checked, but they're out of stock”…(TL).

The results of the study also show that the availability of infrastructure is not sufficient, especially at the Hasanuddin IHSPP, Kalegowa Village, such as, the seats are still lacking, the IHSPP space is narrow because some elderly IHSPP still join the toddler IHSPP, so the participants who attend are still crowded and there are still those who have not got a place. sitting and the elderly had to queue and sit outside the IHSPP. There are even chairs that are no longer suitable for use by the elderly.

"Actually, there are still a lot of lack of facilities. Half of it, just look at the mako for yourself, we are still confused, because there are not enough seats because the new seats are narrow because we are joining the IHSPP for toddlers "….(KD2.)

“There are so many, especially the toilets where there is no water, because the engine was lost, it was stolen by poor people, we also need this canopy so that the sun does not get hot in front of the IHSPP, and it also accumulates inside. So if the shortcomings are many”….(KD3)

"Alhamdulillah, that's enough, maybe the location that you want to add, ... yes, it's expanded because there are already many people, every month more and more people check anyway"… (L2.)

3. Fund

The results showed that the source of funds used by UPT Puskesmas Somba Opu for the implementation of the elderly empowerment program used BOK funds (Health Operational Assistance) which only covered the transportation costs of health workers to visit every IHSPP for the elderly.

"If the funds are from the BOK, then the funds prepared for the IHSPP will be for officer transport, for cadres there is also transportation but it is prepared by the local government"….(TPTM).

"If we are from the puskesmas, we only have personnel, but the source of the funds is from the BOK"….(TP).

The funds used to support the facilities in each IHSPP for the elderly are obtained from the local government and if the funds are still lacking, the cadres will participate in collecting funds.

"So it's also normal for us from the kelurahan to give us this, after all, it's also normal for us to have joint cadres to raise funds if we don't have enough"…(KD2).

Each cadre gets an allowance from the kelurahan in the amount of Rp. 150,000.- per three months which each month only gets Rp. 50,000.-.

"Oh yeah, there is an incentive, every three months the village gives it, every three months it's one hundred and fifty, so five per month. (KD1).

In the implementation of this program, the elderly do not need to spend money to get health services, they only need to be present at the IHSPP, they can already get health services and health checks according to the complaints they feel for free on

condition that they bring a JKN card (KIS or BPJS). However, for the elderly who do not have a JKN card, a fee of Rp. 2,500 will be charged for all examinations and medicines.

"Except for this one, yes… those who don't have BPJS, we usually apply it as applied at the health center, pay two thousand and five hundred"…. (TL).

"If you want to come here, you can bring your ID card with your KK, if you don't have it, it can also be Askes or BPJS"….(L3).

4. Ingredient

The materials needed to support the process of the IHSPP for the elderly are medicines and vitamins. Where the medicines and vitamins are sufficient, and if there are elderly people whose medicines have run out after the IHSPP, but there has been no change in their illness, they will be directed for further examination at the puskesmas.

"Because this IHSPP is not a continuous treatment anyway, so we ordered them to come for treatment at the Puskesmas"….(TF).

"So that's the medicine from the IHSPP to three hariji, if it's finished, it's sent to the puskesmas if you're still sick"… (L1).

PROCESS

1. Planning

In this study, the type of activity that will be carried out is carrying out physical activities, then proceed with examination and counseling and ends with providing education related to GERMAS, namely PHBS. The implementation of IHSPP in each kelurahan is carried out once a month and each IHSPP has its own implementation schedule.

"So the flow of activities includes physical activity, health checks, and education for germans, besides that we also hold counseling, not just germas, we listen to a lot of complaints from parents, so the IHSPP is held once a month"…(TPr).

To support the success of the IHSPP program for the elderly, the kelurahan implements an MMK (Ultimate Community Meeting) which is held once a year to discuss UKBM (Community-Based Health Efforts) for health programs at the kelurahan level, especially for the elderly IHSPP program.

"For example, there is no special meeting, only every year, there is such a thing as a village community meeting, but if the village people say it is a musrembang, if we are MMK, we will discuss some SME activities there, we will discuss programs related to UKBM here"... . (TPr).

As for the way that the cadres will call the elderly before the IHSPP is held, the cadres invite the elderly through mosque speakers, whatsapp groups, and visit the homes of the elderly by inviting them to attend the IHSPP.

"Yes, we are usually called through the mosque prayer hall, there is also a wa group, and if we approach the IHSPP schedule, we usually go to his house to remind him and we usually pick him up, like the daeng juping"….(KD 1).

2. Implementation

a. Distribution

The results showed that there was a cross-sectoral collaboration involving PKK, Kecamatan, Kelurahan, RW, and also RT women with the aim of achieving and optimally running the IHSPP program for the elderly.

This is known from the results of interviews with informants of health workers and cadres.

"Yes, it is clear that there is, because usually the PKK who help us there are usually the ones whose houses are also sometimes occupied by RT & RW"….(TPr).

"Yes, there are RT & RW, PKK too, so for this program it is all included in POKJA 4 PKK."...(KD 3).

The innovation made specifically by the puskesmas for the elderly is INOVASI SALEHA (Healthy Elderly Saturday), which includes elderly gymnastics and also education for the elderly which is held every Saturday at the Somba Opu health center.

"For Usila, there is already an innovation, the Saleha Innovation, so there are gymnastics, there is education, so there is collaboration with cross-sectors as well".....(TPTM).

b. Monitoring

Health monitoring carried out during the Elderly IHSPP program included measurements of abdominal circumference and weight measurement. And if there are elderly who cannot visit the elderly IHSPP because the elderly are disabled or have certain diseases, then usually the officers and cadres

usually visit the elderly's house which is usually called Homecare.

"Yes, there is monitoring, weight, abdominal circumference and especially blood pressure monitoring," (TPr).

"Actually, there used to be homecare that was prolanis, but during the pandemic, there was no adami. So the officers used to come with the medicine and put them under pressure too, so actually there is such a thing as Perkesmas, so there is a home visit"… (TPTM).

"Yes, his house is definitely visited, so we continue to control it, if there are patients who can't come"…. (KD 4).

c. Recording and Reporting

The results showed that all the officers and cadres of the elderly IHSPP were recorded according to their respective divisions. The flow of recording from the IHSPP to the Puskesmas and then from the Puskesmas is reported to the Health Office. The reporting related to PTM (non-communicable diseases) is carried out by PTM officers, then the data is inputted directly online to the central

"Everything is actually recorded, if I also input in the PTM, the old officer inputs it, so each part of the report ... we will report to the office, if I go directly to the service and the center again, what now is onlineji"…. (TPTM)

"Yes, there are all of them, so there is a card. The puskesmas saw that too, so it was reported to the puskesmas again"…(KD 2).

OUTPUT

1. Target Accuracy

The results of the study show that all activities have been carried out and their implementation is right on target. The main target is the elderly aged 60 years and over. However, it is possible that residents other than the elderly, especially pre-elderly who want to have their health checked, will be served as services for the elderly.

"During the examination of the elderly, we usually have young people who come and we serve, there are family members from the elderly, we also serve them. When we're tired, we just don't serve. There are also some pre-elderly who check themselves"……(TF).

2. Program Coverage

The results of the evaluation of the work performance of the IHSPP program for the elderly at UPT Puskesmas Somba Opu there are some that are still very far below the target. The coverage of the elderly who visited the IHSPP for the elderly as secondary data obtained from the Somba Opu Public Health Center UPT, male elderly visits as much as 25% and female elderly as much as 13% of the total target. The classification of the elderly age starts from pre-elderly (45-59 years), elderly (≥60 years), and high-risk elderly (≥60 years with health problems).

"So the classification starts from the elderly starting from 45 to 59 years, if the elderly are more than 60 years old, and there are also seniors who are at high risk but have health problems"….(TP)

DISCUSSION

INPUT

1. Power

Based on the evaluation of the IHSPP program for the elderly regarding the input of personnel, the UPT Puskesmas Somba Opu has 5 officers who coordinate and are responsible for the Elderly IHSPP program and one of the officers has received special training regarding the IHSPP program for the elderly, namely Longcare Care (Long-Term) training. The educational background of each officer is S1 and D3, such as AMK (Nurse), SKM (Promoter) S. ST (Laboran), S.Farm (Pharmacist), SKM (PTM Officer). Based on the evaluation of the IHSPP program for the elderly from the input of the facilities of the UPT Puskesmas Somba Opu, the health officer of the UPT Puskesmas Somba Opu once provided guidance and training to cadres to support their knowledge and abilities.

This is in line with research conducted by Kasma et al., (2019) After conducting interviews with respondents through questionnaires, information was found that in the implementation of the elderly IHSPP there are cadres and health workers as well as elderly programmers who are tasked with running the program and helping the welfare of the elderly, has attended training, is able to work together between programmers and cadres, provides responsive, polite, and friendly service, is able to be an educator, is able to teach elderly gymnastics

which is done every Friday at Batua Health Center, and is able to mobilize the elderly on service days. (Kasma et al., 2019)

This is also a form of actualization of the hadith of the Prophet of Allah sallallahu 'alayhi wa sallam which said: "Whoever conveys only one knowledge and there are people who practice it, even though the one who conveys it is dead (died), he will still get a reward" (HR. Al Bukhari) .

Through his knowledge, Allah will make it easy for him to do good deeds. As is known, good deeds are a way for every servant to get closer to Allah SWT. Useful Knowledge until the End of Life

Rasulullah SAW also emphasized the virtue of useful knowledge, both while still in this world or after death.

"When a person dies, his deeds are cut off, except for three things: almsgiving, useful knowledge or a righteous child who prays for him." (HR. Muslim).

2. Means

Based on the evaluation of the IHSPP program for the elderly from the input of the facilities of the Somba Opu Health Center, the availability of facilities to support the IHSPP program for the elderly is not good enough. Where only the scales were prepared by the kelurahan so that there are still some facilities that are borne by the puskesmas such as, stomach meter, Easy Touch GCU (Glucose, Cholesterol, Uric Acid), and also Hematology Analyzer (HA). The availability of infrastructure is also not sufficient, especially at the Hasanuddin IHSPP, Kalegowa Village, such as, the seats are still lacking, the IHSPP is narrow because some elderly IHSPP are still joining the toddler IHSPP, so that the participants who attend are still crowded and there are still those who have not got a seat and the the elderly have to queue and sit outside the IHSPP.

This is in line with research conducted by Widodo et al., (2020) The availability of facilities and infrastructure at the Elderly IHSPP Program in the Harapan Raya Health Center Work Area, Bukit Raya District, Pekanbaru City is not adequate because there are still limited medical equipment such as the absence of a height gauge, thermometer. , KMS, as well as places used for IHSPP activities for the elderly are still joined by toddlers (Widodo et al., 2020).

3. Fund

In the evaluation of the IHSPP program for the elderly at UPT Puskesmas Somba Opu, the funds used by UPT Puskesmas Somba Opu for the implementation of the elderly empowerment program used BOK funds and only covered transportation costs. The funds used to support the facilities in each IHSPP for the elderly are obtained from the local government and if the funds are still lacking, the cadres will participate in collecting funds. This is in line with research conducted by Widodo et al., (2020) Financing for the Elderly IHSPP Program in the Harapan Raya Health Center Work Area, Bukit Raya District, Pekanbaru City has not been adequate because there is no special allocation of funds to run the program, so that in its implementation only money is used. non-governmental organizations and these funds are also not sufficient to carry out the activities of the IHSPP for the elderly. Policies on the Elderly IHSPP Program in the Work Area of the Harapan Raya Health Center, Bukit Raya District, Pekanbaru City are in line with Law no. 36 of 2009 concerning Health, article 138. However, in its implementation it has not been implemented optimally due to limited facilities and infrastructure as well as funding (Widodo et al. 2020).

This is also in line with research conducted by Hano (2019) for the funds provided for the IHSPP services for the elderly in the Bongomeme Health Center area. IHSPP for the elderly with a budget taken in the Operational Health Assistance (BOK) activity (Hano, 2019).

4. Ingredient

Based on the evaluation of the IHSPP program for the elderly, the materials used to support the ongoing process of the IHSPP for the elderly, namely drugs such as cholesterol, gout, hypertension, and other drugs, as well as vitamins, are sufficient and if there are elderly people whose medicine has run out after IHSPP, but there is no change. If the patient is diagnosed with the disease, they will be directed for further examination at the puskesmas.

This is in line with the research conducted by Arnis (2019) Health workers give medicines to the elderly who are sick. Most of the elderly suffer from hypertension, rheumatism, diabetes mellitus, cough,

and some even post stroke (Arnis, 2019).

If it is reviewed based on Dunn (1999) evaluation theory, it can be concluded that, for the Effectiveness criteria, it can be said to be effective, because in terms of personnel it is very good to support the running of the program. The health workers and cadres have attended training to improve their abilities and knowledge related to the implementation of IHSPP for the elderly. However, if viewed from an efficiency perspective, it cannot be said to be efficient, because the funds in implementing the IHSPP have not been efficient to support the program, as we saw earlier that to meet the needs of the IHSPP it still depends on cadres who work together to collect money to meet the needs of the IHSPP. at IHSPP and occasionally there are funds from the kelurahan. However, from a adequacy perspective, it can be said to be sufficient because the materials used in the IHSPP for the elderly such as medicines and vitamins are sufficient to support the needs of the elderly. In terms of responsiveness, with this program, the elderly responded very positively because they did not need to spend money and were only present in the implementation of the program to get health services.

PROCESS

1. Planning

Based on the planning for the IHSPP program for the elderly at UPT Puskesmas Somba Opu, the type of activity to be carried out is carrying out physical activities such as elderly gymnastics, then continued with examinations and counseling such as weighing body weight and measuring abdominal circumference and ending with providing education related to Germas, namely PHBS . And the implementation of the IHSPP in each kelurahan is carried out once a month and each IHSPP has its own implementation schedule.

This is in line with research conducted by Kasma et al., (2019). Elderly programmers measure blood pressure, simple lab tests, cholesterol, uric acid and blood sugar during the implementation of the IHSPP for the elderly. Cadres who provide services at the registration section, measuring TB and weighing weight, and filling out KMS, Collecting data related to the lives of the elderly, Arranging types of activities according to what has been agreed. or in accordance with the manual for the elderly IHSPP, cadres who help elderly programmers to carry out IHSPP activities, planning activity costs, developing activities according to the needs of the elderly, implementation is carried out in accordance with agreed implementation instructions or in accordance with the IHSPP manual, IHSPP done every month (Kasma et al., 2019).

Meanwhile, based on the results of the evaluation of the elderly IHSPP program in supporting the success of the elderly IHSPP program, the kelurahan implements the MMK (Ultimate Community Meeting) which is held once a year to discuss UKBM (Community Based Health Efforts) for health programs at the village level, especially the elderly IHSPP program.

This is not in line with research conducted by Kurniasari et al., (2018) The coordination between the internal IHSPP management and the puskesmas can be said to be good because there are always regular monthly meetings at the puskesmas. Likewise, coordination meetings between internal IHSPP officials are also held every month. However, in the working area of the Bandarharjo Health Center, not all IHSPP hold internal coordination meetings for the management (Kurniasari et al., 2018).

2. Implementation

a. Distribution

The results of the evaluation conducted on the elderly IHSPP program at UPT Puskesmas Somba Opu showed that there was cross-sectoral collaboration involving PKK, Sub-district, Kelurahan, RW mothers, and also RT so that the goals were achieved and the elderly IHSPP program could run optimally.

This is in line with research conducted by Hano (2019) In the implementation of the IHSPP for the elderly in the working area of the Bongomeme Health Center in accordance with the informant's statement that the IHSPP activities for the elderly are supported by local parties because this is one of the important things in the implementation of the IHSPP. These elderly people, the people in the working area are very enthusiastic, especially the Village Head, cadres, and PKK movers in the village (Hano, 2019).

The results of the evaluation carried out on the elderly IHSPP program at the UPT Puskesmas Somba Opu, an innovation made specifically from the puskesmas for the elderly, namely the SALEHA Innovation (Healthy Elderly Saturday), which includes elderly exercise and education for the elderly which is carried out every Saturday at the Somba Opu health center .

This research is in line with research conducted by A.Yulia Kasma et al., (2019). The activities of the elderly IHSPP are not only carried out on IHSPP days but there are other additional activities carried out by programmers and cadres, namely doing elderly gymnastics at the puskesmas every Friday (Kasma et al. 2019).

b. Monitoring

The results of the evaluation regarding health monitoring carried out during the implementation of the Elderly IHSPP program included measurements of abdominal circumference and weight measurement. And if there are elderly who cannot visit the elderly IHSPP because the elderly are disabled or have certain diseases, then usually the officers and cadres usually visit the elderly's house which is usually called Homecare.

ThingThis is in line with research conducted by Arnis (2019). Health cadres who have been trained will then become Pokja Elders who are tasked with proactively assisting the elderly in their respective RW areas. In addition, the working group is also tasked with facilitating the elderly who need health services, for example taking the elderly to the puskesmas if the elderly need treatment but are unable to reach health care facilities. The Pokja also visits the elderly door to door if the elderly cannot go to the IHSPP or puskesmas, and reports the data to health workers (Arnis, 2019).

c. Recording and Reporting

Based on the evaluation conducted regarding the elderly IHSPP program at the UPT Puskesmas Somba Opu, it showed that all the officers and cadres of the elderly IHSPP were in accordance with their respective divisions. The flow of recording from the IHSPP to the Puskesmas and then from the Puskesmas is reported to the Health Office.

This is in line with research conducted by Gustin and Rosantri (2017). Based on in-depth interviews recording the activities of the elderly IHSPP carried out by cadres then recapitulated by local managers and then reported to the puskesmas, if there is a delay in reporting then there are sanctions received by local managers such as village midwives in the form of delay reduction (Gustin and Rosantri, 2017).

If it is reviewed based on Dunn (1999) evaluation theory, it can be concluded that, for the effectiveness criteria in the process of implementing the IHSPP for the elderly, it can be said to be effective, because in its implementation there are three main components carried out as the Germas program, namely Physical Activity (Elderly Gymnastics), Health Checkup & Counseling, and PHBS Education to support the health of the elderly.

In terms of adequacy, it can be said that it is sufficient because the elderly have received health services such as measuring blood pressure, simple lab tests, cholesterol, uric acid and blood sugar during the implementation of the IHSPP for the elderly. If we look at it in terms of smoothing, it can be said that it is evenly distributed because in practice the elderly who attended have received the same health services. From the point of view of accuracy.

OUTPUT

1. Target Accuracy

The results of the evaluation conducted regarding the IHSPP program for the elderly at UPT Puskesmas Somba Opu regarding the activities that have been carried out and the implementation is right on target. The main target is the elderly aged 60 years and over. However, it is possible that residents other than the elderly, especially pre-elderly who want to have their health checked, will be served as services for the elderly.

This study is in line with research conducted by Kurniasari et al., (2018). However, there is still a discrepancy in the target aspect where there are several main informants of the Krobokan Health Center who think that the target for the elderly IHSPP is only the elderly aged 60 years and over. At the Krobokan Health Center, the elderly are not the target of the IHSPP, but if they want to have their

blood pressure checked, they will be served.

5. Program Coverage

Based on the evaluation that has been carried out regarding the IHSPP program for the elderly at UPT Puskesmas Somba Opu, the work performance of the IHSPP program for the elderly at UPT Puskesmas Somba Opu is still very far below the target.

This is in line with research conducted by Gustin and Rosantri (2017). The results of the implementation of the IHSPP program for the elderly in the working area of the Kumanis Health Center have not been implemented properly and the coverage of elderly health services has not reached the target. Based on the number of existing elderly targets, it is not proportional to the number of elderly visits each month. In this case, if you look at the geographical conditions of the Kumanis Health Center working area, which is mostly a hilly area, the distance between the residents' houses and the location for the elderly IHSPP is quite far, and in general the people's livelihood is farming and gardening.

In terms of effectiveness, it cannot be said to be effective because in its implementation there are still many elderly people who are not present at the IHSPP due to the lack of enthusiasm of the elderly. When viewed in terms of accuracy, it is right on target, where the main target is the elderly aged 60 years and over. However, it is possible that residents other than the elderly, especially pre-elderly who want to have their health checked, will be served as services for the elderly.

CONCLUSION

Based on the above discussion (Input, Process & Output) it can be concluded that in general it can be said to be good because in the implementation of the integrated service post program for the elderly, it has fulfilled several indicators both from input, process and output based on the technical book for implementing the integrated service post program for the elderly in Indonesia. . However, in terms of input, it is still necessary to add more adequate facilities at the integrated service post for the elderly and in terms of funds that need to be considered by the local government.

Limitations of the study

Limitations in this study are the lack of participation from the elderly as informants and physical limitations such as impaired hearing are also a limitation for providing further questions by the elderly as informants in this study, so assistance from health cadres is needed to provide clear answers.

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The Influence of SARS-CoV-2 Vaccination on 28-Day Mortality and Hospitalization Rate of COVID-19 Patients Age between 18-40 Years**

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ABSTRACT:
Purpose: The purpose of our research is to determine the protective impact of CoronaVac vaccine in individuals under the age of 40 and over the age of 18 who have had COVID-19 infection.
Material and Methods: Patients aged 18-40 years who applied to our hospital with COVID-19 + as a test were divided into two groups according to their CoronaVac vaccine status, and the morbidity and mortality of the patients were investigated.
Results: In the present research, the total mortality ratio in the unvaccinated patient group was 8.2%, while the overall mortality rate in the patient group vaccinated was 0% (p = .043).
Conclusion: The 0% mortality rate in persons who received two doses of CoronaVac vaccine clearly shows the effect of the vaccine on mortality.
Keywords: *CoronaVac, Age, Vaccine*

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INTRODUCTION

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was defined in China in December 2019 and announced as a pandemic by the World Health Organization on March 11, 2020. By April 11, 2022, there were 494 million infected patients and more than 6 million deaths caused by COVID-19 (World Health Organization, 2022a). COVID-19 disease can progress with different clinical symptoms, which are defined in several clinical studies; the most common findings are cough, fever, myalgia, dyspnea, anosmia, headache, and sore throat. In a study of critically ill people, it was found that more more than 50%" for consistency of the cases had a high fever, and about 80% had cough and shortness of breath during their stay in intensive care. On the other hand, symptoms such as fever, cough, sore throat appeared in 40% of subclinical cases. But it has been shown that none of them have dyspnea (Song et al., 2020). Depending on the clinic of the COVID-19 disease, normal or near-normal moderate changes may be observed in laboratory findings. In meta-analysis studies, laboratory findings revealed that C-reactive protein (CRP) was high in COVID-19 infection, low albumin, high erythrocyte sedimentation rate (ESR), decreased eosinophil count, lymphopenia, and rised interleukin-6 (IL-6) and lactate dehydrogenase (LDH) levels (Zhang et al., 2020). Many COVID-19 vaccines have been proven protective in the literature, and

many are widely used around the world. In April 2022, statistics showed that more than 11.25 billion doses of vaccine have been implemented against SARS-CoV-2 all over the World (Vasileiou et al., 2021). CoronaVac, was confirmed for emergency utilization in 22 countries by April 28, 2021 (Gao et al., 2020; McGill COVID19 Vaccine Tracker Team., 2021). CoronaVac has sufficient impact on both symptomatic SARS-CoV-2 infection and serious COVID-19 and has been safe among a group aged between 18 and 59 years (Gao et al., 2020). A research conducted in Tennessee, USA indicated a decrease of bigger than 95% in mortality in the vaccinated aged individuals between December 2020 and March 2021 (Roghani, 2021). It is known that morbidity and mortality in COVID-19 are less common in the younger age population. Based on this, our aim was to examine the influence of the vaccine on morbidity and mortality in individuals aged between 18-40 years who were vaccinated (two doses of CoronaVac) and the cases who were not.

MATERIAL and METHODS

Purpose and Type of the Study

The purpose of our research is to determine the protective impact of CoronaVac vaccine in individuals under the age of 40 and over the age of 18 who have had COVID-19 infection.

Sampling and Participant

Patients with the oropharyngeal/nasopharyngeal swab samples for A real-time reverse transcription–polymerase chain reaction (RT-PCR) COVID-19 + were examined. Our patients were separated into two groups as those who received 2 doses of CoronaVac and 14 days past the vaccine, and those who have never been vaccinated towards COVID-19. Patients who received a single dose of vaccine and were admitted to the hospital within 14 days after vaccination were excluded from the study. Gender, at least one comorbidity, Comorbid diseases, Vaccination status. Hospitalization status, radiologic lung involvement, at admission Hospitalization status, ICU admission, Invasive mechanical ventilation requirement, Mortality were evaluated. In addition, blood Urea, Creatinine, aspartate transaminase (AST), alanine aminotransferase (ALT), LDH, Albumin, Ferritin, White blood cells, Neutrophils, Lymphocytes, C-reactive protein (CRP), procalcitonin (PCT), D-Dimer values were analysed through patient files and hospital data system.

Data Collection Tools

Since our study was planned retrospectively, patient consent was not required. Between July 2021 and January 2022, a total of 276 COVID-19 cases aged 18-40 years who were referred to Malatya Training and Research Hospital were included in the study.

Statistical Analysis

The data gained from the hospital database were edited and converted into Microsoft Excel tables, and the findings of the study were appraised. Statistical Package for Social Sciences (SPSS) version 23.0 for Windows was utilized for statistical analysis. The dispersion of variants was checked with Shapiro Wilk. Normally distributed data are given as mean ± standard deviation; non-normally distributed data are given as median (min–max) values, as well as numbers and percentages. In the study, the t-test was utilized for the analysis of independent variables in the analysis of parametric data, the Mann-Whitney U test was utilized for the analysis of non-parametric data, and the Chi-Square test was utilized for the analysis of categorical data. Independent variables related to hospitalization in the univariate analysis were examined using multivariate logistic regression models. The odds ratio (OR) and 95% confidence interval (CI) were obtained using the "Enter" method. Outcomes were analysed at the 95% CI and significance level of $p < .05$.

Ethical Approval

This present study was planned retrospectively. Malatya Turgut Ozal University clinical research ethics committee approval numbered 2021/105 was obtained.

RESULTS

Between July 2021 and January 2022, a total of 276 COVID-19 patients age between 18- 40 years who were consulted to Malatya Training and Research Hospital were included in the study. The number of

male cases was 149 (54.0%) (female 127, 46.0 %), and the mean age was 31.31 ± 8.58 years in the all cases**.** Among the study patients, 38 (13.8%) had at least one comorbid disease; the most common comorbidities were diabetes mellitus (5.4%), chronic renal failure (2.5%), and asthma (1.8%). When the thorax computed tomography (CT) scans of the study population were evaluated in terms of lung involvement, it was determined that 170 (61.6%) of the cases had radiological involvement typical of COVID-19. Moreover, it was determined that 230 (83.3%) of the patients admitted to the hospital were unvaccinated, and 46 (16.7%) were vaccinated with two doses of CoronaVac (fully vaccinated) (Table 1).

The number of male patients was 149 (54.0%) (female 127, 46.0 %), and the mean age was 31.31 ± 8.58 years in the all cases**.** Among the study patients, 38 (13.8%) had at least one comorbid disease; the most common comorbidities were diabetes mellitus (5.4%), chronic renal failure (2.5%), and asthma (1.8%). The study population was grouped as fully vaccinated (n=46) and unvaccinated (n=230). While no difference was obtained among the groups in terms of the frequency of comorbid disease and lung involvement, the mean age of the unvaccinated patients was lower than that of the patients who received two doses of CoronaVac (p < .001). The hospitalization rate was determined to be statistically significantly higher in the unvaccinated patient group than in the patient group vaccinated with two doses of CoronaVac (p = .035).

Table 1. Study population (n=276)

		%	n
Gender	Male	%54.0	149
	Female	%46.0	127
At least one comorbidity	Yes	%12.6	35
	No	%87.4	241
Comorbid diseases	Diabetes mellitus	%5.4	15
	Chronic kidney disease	%2.5	7
	Asthma	%1.8	5
	Hypertension	%1.4	4
	Rheumatic disorders	%0.7	2
	Chronic heart failure	%0.4	1
	Epilepsy	%0.4	1
Vaccination status	Fully vaccinated	%16.7	46
	Unvaccinated	%83.3	230
Hospitalization status	Yes	%53.3	147
	No	%46.7	129

Age; Mean±SD **;** 31.31±8.58

However, when the comparison of respiratory support, none of the patients in the patient group vaccinated with two doses of CoronaVac was provided with invasive mechanical ventilation and respiratory support; however, invasive mechanical ventilation support was applied to 8.2% of the patients in the unvaccinated patient group (p = .043). In addition, the overall mortality rate in the unvaccinated patient group was 8.2%, while the overall mortality rate in the patient group vaccinated with two doses of CoronaVac was 0% (p = .043) (Table 2).

When the laboratory data of the two groups were compared, it was found that the serum LDH, ferritin, CRP and PCT levels at the time of admission to the hospital were statistically significantly higher in the unvaccinated patient group (p = .009, p = .003, p < .001, p = .001) (Table 3).

Hospitalized and non-hospitalized patients were evaluated in the study. In the hospitalized group, the vaccination rate was lower (39.1% vs. 56.0%, p = .035), the frequency of comorbid diseases was higher (23.1% vs. 3.1%, p < .001), and the frequency of cases with lung involvement on thorax CT was higher (85.0% vs. 34.8%, p < .001).

Table 2. Comparison of study population demographic and clinical data by vaccination status

		Unvaccinated (n=230)		Fully vaccinated (n=46)		p
Mean age (Me±SD)		30.45±8.79		35.63±5.77		**<0.001***
		%	n	%	**n**	
Gender	Male	% 57.3	132	%36.9	17	**0.011**
	Female	%42.7	98	%63.1	29	
At least one comorbidity	Yes	%12.6	29	%13.0	6	0.876
	No	%87.4	201	%87	40	
Radiologic lung involvement at admission	Yes	%63.9	147	%50.0	23	0.077
	No	%36.1	83	%50.0	23	
Hospitalization status	Yes	%56.0	129	%39.1	18	**0.035**
	No	%44.0	101	%60.9	28	
ICU admission	Yes	%11.3	26	%2.1	1	0.057
	No	% 88.7	204	%97.9	45	
Invasive mechanical ventilation requirement	Yes	%8.2	19	%0	0	**0.043****
	No	%91.8	211	%100	46	
Mortality	Yes	%8.2	19	%0	0	**0.043****
	No	%91.8	211	%100	46	

Me: mean, SD: standard deviation, ICU: intensive care unit, * Independent sample t test, Chi-squared test

Table 3. Laboratory outcomes of the patients

	Unvaccinated (n=230)	Fully vaccinated (n=46)	p
Urea, mg/dL Median (min-max)	24 (15-239)	21 (10-105)	**0.037***
Creatinin, mg/dL Median (min-max)	0.80 (0.50-2.30)	0.75 (0.55-1.67)	0.168*
AST, U/L Median (min-max)	28 (1-301)	21 (11-154)	**0.008***
ALT, U/L Median (min-max)	28 (2-770)	27 (7-288)	0.578*
LDH, IU/L Median (min-max)	301 (30-1425)	234 (130-662)	**0.009***
Albumin, g/dL (Me±SD)	3.58±0.71	3.53±0.86	0.714
Ferritin, ng/dL (Me±SD)	467±110	228±337	**0.003**
White blood cells, mm³ Median (min-max)	7000 (3100-27500)	7200 (3300-18900)	0.960*
Neutrophils, mm³ Median (min-max)	4540 (370-29160)	4650 (1540-16360)	0.626*
Lymphocytes, mm³ Median (min-max)	1450 (200-8660)	1630 (350-3590)	0.526*
CRP, mg/dL (Me±SD)	5.17±7.31	1.38±2.29	**<0.001**
PCT, ng/mL Median (min-max)	0.08 (0.01-36.90)	0.04 (0.01-0.25)	**0.001***
D-Dimer, µg/mL Median (min-max)	0.33 (0.05-21.00)	0.28 (0.04-12.90)	0.410*

AST: aspartate aminotransferase, LDH: lactate dehydrogenase, , PCT: procalcitonin, ALT: alanine transaminase, Min: minimum, Max: maximum, Me: mean, SD: standard deviation, CRP: C-reactive protein, * Mann-Whitney U test, Independent sample t test

In addition, the mean age and serum LDH, ferritin, and CRP levels of the patients who were hospitalized were detected to be statistically significantly higher at the time of admission ($p < 0.001$, $p < 0.001$, $p = .020$, $p < .001$). However, it was determined that the most important risk factor for hospitalization was the presence of pneumonic infiltration on thorax CT (OR: 6.06, 95% CI: 2.609–14.075, $p < .001$).

DISCUSSION

Vaccination is the most effectual way of defence against COVID-19. Persons under the age of 40, who have a lower risk of mortality than the general population, may die from COVID-19. In our study, the CoronaVac vaccine was found to be effective in reducing mortality and morbidity in this patient population. SARS-CoV-2 vaccines may be able to decrease the disease incidence and as well as transmission in a population. Vaccination is thus a critical step in controlling the transmission chain of SARS-CoV-2 infections. It is also necessary to decrease both morbidity and mortality due to SARS-CoV-2 (Hodgson et al., 2021). Our study revealed that the clinical course of vaccinated individuals under the age of 40 was mostly mild, pulmonary involvement was rare or absent, and mortality was not observed. Although the clinic of the patient who develops due to COVID-19 varies from patient to patient, the most frequent clinical findings are fever, weakness, sputum, nausea, and shortness of breath, and vary according to the stages of the disease. The disease is most commonly associated with respiratory tract infections, such as pneumonia, colds, and flu (Hussin et al., 2020). Associated with the disease are thromboembolic processes as a result of mucosal damage and/or vasculitis due to virus inoculation, cardiovascular (Myocardial infarction (MI), myocarditis, pericarditis), digestive (anosmia, diarrhea, ischemic colitis, hepatitis, thyroiditis), central nervous system (encephalitis, stroke, Cerebrovascular disease SVD), urinary (various findings and complications may develop in different systems such as acute renal failure), urogenital (estrogen, testosterone hormone level imbalances). Susceptibility to venous hypercoagulability is increase (Chaimayo et al., 2020).

SARS-CoV-2 is believed to mainly infect the respiratory system, inducing inflammation, interstitial injury, alterations in the parenchyma, and cell death (Ye et al., 2020). The most frequent CT finding of COVID-19 pneumonia is ground glass opacities, and its typical model has been reported as bilateral, peripheral, multilobar, and posterior localization (Hani et al., 2020). Ground glass opacity can be seen alone or in conjunction with different findings, such as consolidation, interlobular septal thickening, and vascular dilatation (Cömert and Kıral, 2020) Consolidations are typically multifocal, segmental, patchy, mostly located in the lower lobe and peripheral and may include air bronchograms (Eastin and Eastin, 2020). Pan et al. found that consolidation was rare in the early stages and that the consolidations widened and diffused in the later stages (Pan et al., 2020). While consolidations are more common, severe, and fatal among those with chronic diseases (diabetes, chronic heart and lung disease, chronic kidney and liver disease, immunosuppressive disease, or treatment), obese, pregnant, and postpartum women, it progresses less and much milder in the pediatric age group (Liu et al., 2020). When CT scans were analyzed for lung involvement, it was determined that 170 (61.6%) of our cases had radiological involvement typical of COVID-19. While pulmonary involvement was 50.0% in the vaccinated group, it was 63.9% in the unvaccinated group. However, it should be noted that many people survive the disease asymptomatically (Diken, 2021). Responses to vaccines may differ in younger adults from older adults due to the aging of their immune systems (Chen, 2021). Phase 1/2 CoronaVac trials in volunteers aged 18-59 years and over 60 years indicated that the vaccine doses and schedules studied (3 µg or 6 µg, administered 14 days or 28 days apart) all had analogous safety and immunogenicity (Zhang et al., 2021).

Different efficacy rates were discovered in studies evaluating CoronaVac vaccine efficacy based on age groups. The CoronaVac vaccine provided 83.5% protection towards symptomatic infection compared to a placebo in a study conducted in Turkey among volunteers aged 18-59 (Tanriover et al., 2021). WHO data shows that as of 08.05.2022,

15.038.495 cases were seen in our country, and 98.819 people died. The total vaccine dose is 147, 426, 248 (World Health Organization, 2022b). The Chile study found 65.9% efficacy for symptomatic infection, 87.5% for hospitalization, 90.3% for intensive care unit admission, and 86.3% for death (Jara et al., 202). In the Brazilian study, the efficacy of CoronaVac towards symptomatic COVID-19 was 50.7%, moderate and severe cases (score ≥4) 83.7% (95% CI 58.0-93.7), and 100% (95% CI 563.4-1000.0), respectively (Palacios et al., 2021). The CoronaVac vaccine has been proven to be 51% effective in symptomatic infections. It has also been detected to be 100% protective against hospitalization and serious diseases (World Health Organization, 2022c). When our patients were compared based on their vaccination status, the rate of hospitalization was observed to be statistically significantly higher in the unvaccinated patient group than in the patient group vaccinated with two doses of CoronaVac (p = 0.035). While vaccination continues in the areas of the world where the COVID-19 pandemic persists, studies have focused on the decrease in immunity with two doses of vaccination over time and the necessity of a third-dose vaccination (Wilder-Smith and Mulholland, 2021). It is emphasized that the third vaccination dose produces more neutralizing antibodies (Yorsaeng et al., 2022). Recent data have raised several concerns that the immunity developed by two doses of vaccination towards COVID-19 diminishes over time, concluding in decreased protection towards SARS-CoV-2, raising the question of whether a third dose would be necessary for an extended period (Wilder-Smith and Mulholland, 2021).

We concluded that the vaccine's effect persisted because the period between our patients in the vaccinated group and the time of infection was less than four months. Advanced age, male gender, and the existence of at least one comorbidity have been declared to be independently related to mortality among COVID-19 cases (Fang et al., 2020). DM (5.4%), chronic renal failure (2.5%) and asthma (1.8%) were the most frequent comorbidities in our patient group. The COVID-19 mortality rate is estimated to be 2.34%. When only hospitalized cases are considered, the COVID-19 mortality rate rises to an estimated 14%, approaching the overall SARS case mortality rate of around 15% (18). While 20% of infected patients require hospitalization, 5% need intensive care and mechanical ventilation (Amato et al., 2021). When our patients were compared in terms of respiratory support; While none of the patients in the patient group who received two doses of CoronaVac were provided with invasive mechanical ventilation and respiratory support; Invasive mechanical ventilation support was applied to 8.2% of the cases in the unvaccinated patient group (p = 0.043). In a study carried out with COVID-19 cases in the intensive care unit, the mortality ratio was found to be 40.8% (Ganesan et al., 2021). In the present analysis, the total mortality ratio in the unvaccinated patient group was 8.2%, while the overall mortality rate in the patient group vaccinated with two doses of CoronaVac was 0%. Studies indicate that the lymphopenia observed in patients may be related to disease seriousness and mortality in critical COVID-19 cases (Yang et al., 2020). Furthermore, when the laboratory data of the groups at the time of hospitalization were compared, it was discovered that the serum LDH, ferritin, CRP, and PCT levels were statistically significantly higher in the unvaccinated patient group at the time of hospitalization.

Limitation of the Research

This present study has some limitations. First, our study was conducted in a single center. The antibody titers of subsequently vaccinated cases were unknown.

CONCLUSION

Persons who received two doses of the CoronaVac vaccine had a lower disease effect in terms of both laboratory results and lung involvement. As a result, there is less need for intensive care. In terms of mortality, no patient died in the vaccinated group, while 19 patients died in the unvaccinated group, demonstrating that the two doses of the CoronaVac vaccine are quite effecttual towards the disease.

Conflict of Interest

The authors declare that there is no conflict of interests.

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The Effect of Neural Mobilization on Muscle Strength, Reaction Time and Pain Threshold

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ABSTRACT:
Purpose: This study's objective was to assess the effectiveness of neural mobilization on asymptomatic, healthy volunteers' pain, muscle strength, and reaction time.
Material and Methods: Handgrip strength, reaction time, and pain thresholds of 50 participiants' were evaluated using a dynamometer, the Nelson Hand Reaction Test, and a digital algometer, respectively. While the dominant extremities of the participants constituted the neural mobilization group, the non-dominant extremities constituted the control group. The same measurements were repeated in both extremities by the blinded assessor after median nerve mobilization was applied to the dominant upper extremities of participants.
Results: When the measurements before and after mobilization were compared in the neural mobilization group, it was seen that the handgrip strength increased ($p<0.01$) and the reaction time decreased ($p<0.001$) after mobilization; The differences in pain threshold score were not statistically significant ($p> 0.05$). There was no statistically significant difference in handgrip strength between the control group before and after neural mobilization ($p> 0.05$); however, a statistically significant decrease was found in reaction time and pain threshold score ($p <0.05$). There was no statistically significant difference between the groups in parameters before and after mobilization ($p> 0.05$).
Conclusion: Neural mobilization may increase grip strength in healthy individuals but has no effect on pain threshold. Its effect on reaction time can be explained by motor learning. New studies are needed in different disease groups.
Keywords: *Neural mobilisation, Muscle strength, Reaction time, Pain threshold*

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INTRODUCTION

The nerve function is altered in entrapment neuropathies as a result of mechanical or dynamic compression. Anatomical restrictions at specific areas lead to nerve entrapment disorders. Anatomical places where the nerve passes through fibro-osseous or fibromuscular tunnels or penetrates a muscle are at risk for nerve entrapment disorders (Meyer et al., 2018). Besides the most common carpal tunnel syndrome, thoracic outlet syndrome, tarsal tunnel syndrome, and cubital tunnel syndrome are also common entrapment neuropathies. Surgical procedures or conservative treatments like resting splints, anti-inflammatory drugs, steroid injection, physiotherapy, manual therapy, and mobilization approaches are recommended in the literature as treatment options (Alam et al., 2018; Ballestero-Perez et al., 2017). Recently, several studies have reported the use of neurodynamic mobilization as a conservative treatment option (Bassoon et al., 2019; Plaza-Manzano et al., 2020). The more comprehensive term "neurodynamics" was suggested by Shacklock in 1995 (Kostopoulos, 2004). The integrated biomechanical, physiological, and morphological functions of the nervous system are now referred to by this term, which has gained wider

acceptance. If the nervous system is presenting neurodynamic harmony, this indicates that mechanical and physiological properties are normal and in accordance with each other (Plaza-Manzano et al., 2020; Valente et al., 2014. Neural mobilization is a component of manual therapy utilized for a variety of diseases, including pain, lateral epicondylitis, cubital tunnel syndrome, carpal tunnel syndrome, tarsal tunnel syndrome and osteoartrtithis (Beneciuk et al., 2009; Kim et al., 2016; Yılmaz et al., 2022; Oskay et al., 2010, Ballestero-Perez et al., 2017; Leblebicier et al.,2022; González-Matilla et al., 2022). Through the positioning and movement of numerous joints, neurodynamic treatments are a type of manual therapy that target the neurological structures (Villafañe et al., 2012). Neural mobilization involves raising the nervous system's tension through specific postures, then moving slowly and rhythmically to target the spinal cord and peripheral nerves for better nerve impulse conduction (Valente et al., 2014).

Neurodynamic procedures can be applied in two ways: sliding and tensioning. The movements of at least two joints are alternately combined to form sliding techniques. One movement loads the peripheral nerve, increasing the nerve's tension, while the second action unloads the nerve at the same time, lowering tension (Villafañe et al., 2017; Villafañe et al., 2012). The study's use of tensioning procedures, which entail elongating the space between either end of the nerve bed, is thought to be more forceful than sliding approaches (Beneciuk et al., 2009). Since nerves are viscoelastic structures, they may react to mobilization techniques and treatments similar to those of the musculoskeletal system, with the goal of reestablishing the natural movement of neural tissue and reducing such inappropriate neural tensions (Kostopoulos, 2004). Nerve mobilization techniques are performed to reduce nerve mechanosensitivity and increase the compliance of nerve tissues by increasing neural flexibility (Kim, Cha and Ji, 2016). Nerve mobilization improves axonal transport and nerve conduction via this mechanism. Mobilization of a nerve may help lower internal pressure, which might then increase the nerve's ability to receive blood (Alam et al., 2018; Wang et al., 2015). Several studies in the literature have investigated the effects of neural mobilization on pain. It has been shown to reduce pain when used in compression syndromes, particularly in carpal tunnel syndrome (Beddaa et al., 2022) However, few studies have investigated the effects of neural mobilization on muscle strength; we did not encounter any studies on reaction time in asymptomatic, healthy subjects.

MATERIAL and METHODS

Purpose and Type of the Study

The aim of this study; to investigate the effect of neural mobilization on pain, muscle strength and reaction time. This study was an experimental, prospective study.

Sampling and Participant

Asymptomatic, healthy volunteers aged 18-25 years were included in the study. In order to demonstrate the isolated effect of neural mobilization, healthy asymptomatic subjects were selected considering the analgesic effect of physiotherapy applications and pain medication use in diagnosed individuals. Persons who had any neuromusculoskeletal pathology in their upper extremities, had pain in the neck and upper extremities and were using analgesic drugs were excluded from the study. All participants were informed before the study and written informed consent was obtained from all of them. After the first assessment of subjects, neural mobilization was applied to the dominant extremity. Assessments were repeated subsequent to mobilization. The control group consisted of the non-dominant extremities of each subject to which mobilization was not applied. All assessments were made by the same physiotherapist (BK) who had no knowledge of the groups.

Data Collection Tools

After participants' sociodemographic data were recorded on the assessment form during face-to-face interview, handgrip strength, reaction time, and pain threshold were evaluated using a dynamometer, the Nelson Hand Reaction Test, and a digital algometer, respectively.

Handgrip strength: Assessment was conducted by

physiotherapist and repeated three times with a 1-minute break between each; the arithmetic mean was recorded. Measurement was made with the participant sitting comfortably in the chair, with the arm close to the trunk, the elbow flexed to 90º, and the forearm in the mid-position. Data were recorded in kilograms and the device (Baseline Hydraulic Hand Dynamometer 300 LB) was calibrated before and after each measurement.

Reaction time: Reaction time was evaluated using the Nelson Hand Reaction Test. Participants' reaction time was evaluated while sitting in a chair with the forearm placed comfortably on the table. The thumb and index fingertips were positioned in parallel and 8–10 cm outside the table. A physiotherapist held the test ruler between subjects' thumb and index fingers and asked subjects to look directly to the midpoint of the ruler and to catch the ruler with the thumb and index fingers when the ruler was released. When the subject caught the ruler, the line at the top edge of the thumb was read and recorded. This measurement was repeated five times and the average was recorded (Aranha et al., 2017; Eckner et al., 2009).

Pain threshold: Pain threshold was defined as the amount of minimal pressure that turns the pressure sensation into pain (Nussbaum and Downes, 1998; Ylinen, 2007). Pain threshold was evaluated using an algometer (Jtech Commander, USA) over the supinator muscle. The device is a digital pain threshold and consists of a sensor connected to a 1-cm diameter rigid tip. The measurements were repeated three times at intervals of 30 seconds and the average was recorded.

Median nerve mobilization technique: The median nerve mobilization technique was applied as upper extremity neural mobilization. The subject was positioned on their back with the dominant extremity placed at 90° abduction of shoulder and 90° flexion of elbow. A physiotherapist (NG) performed shoulder elevation, elbow supination, wrist extension and ulnar deviation while holding the subject's hand by their web interval and supporting the elbow with their other hand. The participant was asked to turn their head to the opposite side and the stretching effect was increased while applying this technique. The mobilization was terminated by waiting 3 seconds at the last point, and the same process was repeated three times (Kim et al., 2016; Nunes et al., 2016). The neural mobilization technique was always applied by the same physiotherapist (NG) who trained in manual therapy. The measurements of pain threshold, handgrip strength, and reaction time were repeated immediately following application of the neural mobilization technique.

Statistical Analysis

SPSS version 21 (SPSS IBM) was used for statistical analyzes. Statistical significance was assessed at a 95% confidence interval and $p < 0.05$. One-sample Kolmogorov-Smirnov tests and histograms were used to determine whether data were normally distributed. Since data were found to be normally distributed, analysis of data before and after neural mobilization was carried out using paired t-tests. Independent-samples t-tests were used to compare pre- and post-treatment data between groups.

Ethical Approval

Ethical approval for the study was granted by the Marmara University Health Sciences Institute Ethical Ethics Committee (28.03.2016-26).

RESULTS

The sample consisted of 50 subjects (female = 28, male = 22) with an average age of 20.96 (± 1.27) years. Average height was 168.96 ± 7.42 cm and average bodyweight was 64.18 ± 11.43 kg (Table 1).

Comparison of measurements pre- and post-mobilization indicated that handgrip strength was increased ($p<0.01$) and reaction time was decreased after mobilization ($p<0.001$); whereas differences in pain threshold score were not statistically significant ($p>0.05$). In the control group, there was no statistically significant difference between handgrip strength pre- and post-neural mobilization ($p> 0.05$); however, a statistically significant difference was detected in reaction time and pain threshold score ($p<0.05$) (Table 2).

There were no statistically significant differences between groups at pre- or postmobilization parameters ($p> 0.05$) (Table 3).

Table 1. Participant demographic data

	N	Min.	Max.	Mean±SD
Age (year)	50	19	25	20.96±1.27
Height (cm)	50	157	185	168.96±7.42
Weight (kg)	50	44	90	64.18±11.43

Min: minimum, Max: maximum, SD: standard deviation

Table 2. Comparison of data at pre- and post- mobilization between groups (n = 50)

Neural Mobilisation Group	**Mean±SD**	***t***	***p***
Handgrip strength (kg)- before	31.25±10.48	-2.82	**.07**
Handgrip strength (kg) - after	32.32±10.77		
Nelson hand reaction test (cm)-before	17.69±5.31	4.25	**.000**
Nelson hand reaction test (cm)- after	14.99±5.45		
Algometer (kg/cm^2)- before	22.59±9.66	0.17	0.86
Algometer (kg/cm^2)-after	22.36±11.77		
Control Group	**Mean±SD**	***t***	***p***
Handgrip strength (kg)- before	28.87±9.19	-0.92	.358
Handgrip strength (kg) - after	29.21±9.72		
Nelson hand reaction test (cm)-before	18.01±4.58	3.85	**.000**
Nelson hand reaction test (cm)- after	15.59±35.6		
Algometer (kg/cm^2)- before	20.84±9.45	-2.41	0.019
Algometer (kg/cm^2)-after	23.74±13.41		

t: paired t test

Table 3. Comparison of pre- and post- mobilization data between groups (n = 50)

		Group	**Mean±SD**	***t***	***p***
Before	**Handgrip strength (kg)**	Neural Mob.	31.25±10.48	1,0.	0.230
		Control	2887±9.19		
	Nelson hand reaction (cm)	Neural Mob.	17.69±5.31	-0.325	0.746
		Control	18.01±4.58		
	Algometer (kg/cm^2)	Neural Mob.	22.59±9.66	0.915	0.363
		Control	20.84±9.45		
After	**Handgrip strength (kg)**	Neural Mob.	32.2±10.77	1.52	0.132
		Control	29.21±9.72		
	Nelson hand reaction (cm)	Neural Mob.	14.99±5.45	-0.649	0.518
		Control	15.59±3.56		
	Algometer (kg/cm^2)	Neural Mob.	22.36±11.77	-0.547	0.586
		Control	23.74±13.41		

t: t-test in independent groups

DISCUSSION

This study was conducted to investigate the immediate effects of neural mobilization on pain threshold, handgrip strength, and reaction time in healthy subjects. Measuring the value of an individual's sensation during algometric assessment as the change in the pressure sensation to a pain sensation in kg/cm^2 allows the objective assessment of pain, which is an otherwise subjective experience. Pain pressure threshold was assessed by algometer in this study. Examination of the literature revealed that some studies used the threshold of vibration perception or thermal perception as a criterion for the sense of pain (Beneciuk et al., 2009; Kumar et al. 2010); however, some studies have assessed the pain threshold with an algometer-as was the case in the present study (Lalouni et al., 2021; de Dios Perez-Bruzon et al., 2022). Studies that selected subjects with similar pathologies have found that the pain decreased with the application of neural

mobilization (Pedersini et al., 2021; Peacock et al., 2022); whereas in studies with healthy cases, the results of neural mobilization on pain varied from effective to ineffective (Beneciuk et al., 2009; Nunes et al., 2017; Sousa Filho et al., 2017). Kumar et al. suggested that the efficacy mechanism of neural mobilization on pain might be caused by firing afferent kinesthetic impulses with motion components during neural mobilization. However, this effect is minimized by the presence of a sham-controlled group, and the authors recommended investigation of the role of cognitive-perceptual and placebo effects (Kumar et al., 2010). Beneciuk et al. looked into how thermal pain sensitivity was affected by upper extremity neural mobilization. The findings revealed that whereas A delta fiber-mediated pain perception was not affected by neural mobilization employing a tensioning approach, C fiber-mediated pain perception (temporal summation) was immediately hypoalgesic (Beneciuk et al., 2009). Patients with painful diseases have increased temporal summation of C fiber-mediated pain compared to healthy controls. Inhibiting temporal summation is therefore thought to have therapeutic benefits (Beneciuk et al., 2009). Despite these findings, the fact that there was no difference between groups in the pain threshold variable was attributed to our cases being asymptomatic. The number of sessions of neural mobilization is assumed to be another factor; other studies showing therapeutic effects of neural mobilization have conducted multiple sessions in contrast to our one-session studies (Jeong et al., 2016, Peacock et al., 2022). We believe that the stimulated central structures send impulses in increasing intensity and frequency to the alpha motor neurons, which is believed to result in more frequent firing of the motor unit, and thus more muscle fiber contraction as an effect mechanism of neural mobilization on muscle strength. That is, this increase may be a result of increased spinal reflex response to nociceptive stimulation (Hartley et al., 2015). According to some researchers, this reaction to muscle is also produced as a defense mechanism to prevent nerve damage. This notion is supported by trials in which people who were asymptomatic underwent increased muscular activity during neural testing (Gupta and Chahal, 2021). After mobilization, there was no obvious change in reaction times between the two groups, despite a discernible difference between pre- and post-mobilization in both the control group and the neural mobilization group. The repeated repetitions of the Nelson Hand Reaction Time test to get the average value may have had a learning impact on both groups, causing an increase in reaction time. To our knowledge, this result does not coincide with any other studies in the literature that have investigated the effects of neural mobilization on reaction time.

One of the limitations of our study is that we investigated the effects of neural mobilization after only one session. Unlike the present study design, Kumar et al. investigated the effects of neural gliding and massage on vibration, heat, and cold perception thresholds in patients with painful diabetic peripheral neuropathy While they found a statistically significant difference between pre- and immediately post- and pre- and 15 minutes postneural gliding and massage, they did not find any difference between immediately post- and 15 minutes post-treatment (Kumar et al., 2010) Although the literature includes more single-session efficacy studies after neural mobilization, there have also been follow-up studies conducted in different time periods (Pereira et al., 2021; Ballestero-Perez et al., 2017; Basson et al., 2019; Plaza-Manzano et al., 2020). One of these studies, published by Oskay et al., examined seven individuals with cubital tunnel syndrome. After 12-month follow-up, there was a significant change in parameters between the evaluations pre- and 12 months post-treatment, but it was also reported that the difference was significant only in some parameters between immediately post-treatment and 12 months post-treatment (Oskay et al., 2010). A second limitation of our study is that the sample consisted of asymptomatic, healthy individuals. Although this can be viewed as a limitation, it can also be considered a strength. To put forward the effects of neural mobilization on muscle strength and reaction time in healthy subjects will be a guide as a protective protocol to prevent injuries. Future studies with larger sample sizes may lead to the consideration of neural mobilization as a treatment option, resulting

in effective treatment outcomes. Although many studies in the literature examined the effects of neural mobilization on pain and muscle strength (Cuenca-Martinez et al., 2022; Souza et al., 2020; Sharma et al., 2016) there has been no investigation of its effect on reaction time.

Moreover, although some studies have investigated the effects of neural mobilization on healthy subjects, there has been limited study on its use as a therapeutic neurodynamic approach in symptomatic situations in which nerve mechanosensitivity has changed (Huang et al., 2015). As a result, as a continuation of this preliminary research on healthy cases, we plan to evaluate the effect of neural mobilization on reaction time in pathological conditions.

Studies examining the effects of neural mobilization on handgrip strength are very few and there are no studies on the effect of reaction time. As such, our research is unique and makes clinical contributions to the field of neuromusculoskeletal physiotherapy. Furthermore, while some studies have investigated neural mobilization in different pathologies, there are no specific protocols that describe the time, duration, or frequency of neural mobilizations. This gap in the evidence base suggests the need for multidisciplinary studies on this subject and its clinical significance.

CONCLUSION

Neural mobilization may increase grip strength in healthy individuals but has no effect on pain threshold. Its effect on reaction time can be explained by motor learning. New studies are needed in different disease groups.

Conflict of Interest

There is no conflict of interest, according to the authors

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