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# Strengthening the preoperative Nursing Care: Stress and coping abilities of clients undergoing surgical procedure in Tabuk

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**ABSTRACT**

*Background:* Patients who are undergoing for any kind of surgical intervention faces anxiety and stress. They need to adapt positive coping strategies to control their stress. If the stress level exceeds than coping, it will affect the recovery and surgical outcome. *Purpose:* To assess the level of stress and coping abilities of a clients who are planned to undergo for surgery in Tabuk. *Methods:* This descriptive Cross-sectional survey was conducted in the surgical units of the hospitals under Ministry of Health in Tabuk with the sample sizes of 250 clients. Perceived Stress Scale (PSS) was used to measure the stress level and Coping with Surgical Stress Scale (COSS) was used to measure the strategies used to cope with surgical stress. *Results:* The mean scores stress on PSS was 24.38, SD=8.244. Most of the clients had moderate and perceived level of stress on PSS. Most of the clients used information seeking and turning to religious coping than other strategies. Half of the participants had used favorable coping strategies and 47.6% of the participants used moderate coping strategies. Overall coping scores showed with  $\bar{x}$  =71.2, SD=19.26. Average positive linear correlation was observed between the stress level and coping. Significant difference was observed between the male and female participants on PSS and COSS. *Conclusion:* This study reveals that the clients who are in the preoperative period faces considerable stress and develops coping strategies accordingly. Providing adequate information and facilitating the coping strategies would beneficial in reducing the preoperative stress.

**Keywords:** preoperative stress, coping in preoperative, surgical stress

**1. INTRODUCTION**

Ministry of Health in Saudi Arabia Health Indicators for the Year 2020 indicated the number of surgical operations performed was 0.4 million and number of day surgeries performed was 51,091 (Ministry of Health statistics indicators, 2020). Much advancement in health care technologies is being used

in Saudi Arabia. The key trend of the health sector is minimally invasive surgery. There are emerging technologies in the surgical process and most of the surgical methods find to be safer. However, the patients who are planned for surgical interventions are stressful and anxious. Any kind of operation tends to a degree of anxiety and stress to every patient.

Hospitalization causes traumatic experience and stress for the clients (Chhari & Mehta, 2016). A study from central India reported high stress due to hospitalization. This study identified stress undergoing operation and not knowing the outcome of the treatment was considered to be the major factor for stress. This study highlighted that the members of the health team members significantly contribute to minimizing the stress based by the clients (Chhari & Mehta, 2016). The client whoever is undergoing any invasive procedures faces anxiety and stress. Anxiety before the upper gastrointestinal endoscopy causes adverse consequences and affects the positive accomplishment of the procedure (Arabul et al., 2013). Ethiopian study had identified adverse effect on outcomes of pre-operative anxiety and stress, it actually increasing the risk of infection and leading to unwanted movement such as coughing during surgery. The patients who are anxious and stressful experiences more pain (Nigussie et al., 2014).

Endocrine regulatory mechanisms and the autonomic nervous system produce the Hemodynamic stress responses. This includes increased heart rate and arterial pressure. Especially the clients who are posted for surgery are prone for tachycardia and hypertension due to sympathetic nervous system stimulation (Ismail et al., 2007). The stress level in the preoperative period affects the body with physiological and psychological changes with elevation of high cortisol (Wetsch et al., 2009), pro-inflammatory cytokine release and it causes persistent inflammatory response (Basu et al., 2022). These high plasma cortisol levels were correlated with the stress and anxiety scores. Greater level of perceived stress among the clients who posted for biopsy was observed in a study from kings' college, London (Ebrecht et al., 2004). The major interesting finding on this study was significant negative correlation between the stress level and wound healing. It clearly indicates the stress level affect the wound healing post operatively. Psychological stress in the preoperative period affects the wound repair. The preoperative anxiety level was studied previously, but none of the studies were focused on preoperative stress. Few studies were conducted in Saudi Arabia on preoperative anxiety and stress.

The results of a German study shows that information seeking coping was mostly helpful and popular strategy among the preoperative clients to overcome stress (Aust et al., 2016). High level of stress and anxiety in the pre-operative period among the cardiac clients were observed, disease, surgery, and complications after cardiac surgery are the associated with anxiety (Rosiek et al., 2016). Pre-operative teaching plan is to reduce the stress faced by the clients. This helps to reduce the impact of stressors (Rosiek et al., 2016). Most of the preoperative patients had anxiety and maladaptive coping mechanisms towards pre-operative anxiety during preoperative phase in a study from Ludhiana, India (Swapna Melchisedec & Parmjit Kaur, 2018). However, they were lacking in appropriate use of coping mechanism before surgery. Planning for preoperative teaching is very important to cover the information's about positive coping strategies. The nurses can use different techniques to give the pre-operative teaching.

Pre-operative instruction by video showed reduction in anxiety level and higher satisfaction, the clients reported that they are willing to go another procedure if needed (Arabul et al., 2013; Nikumb et al., 2009). The strategies commonly used in the health care sector are predominantly pharmacological measures than non-pharmacological measures in the preoperative period due to time constraints. It is necessary to measure the preoperative stress and coping to identify the needs of the Tabuk community. Very few studies are available in preoperative stress and coping strategies in the health care sector, especially in Tabuk there is no previous studies focused on this area; understanding this project will be important to for the development of new policies and plans to overcome the pre-operative stress with positive coping. Every client has right to know and participate effectively in the successful surgical treatment.

The preoperative teaching has positive effect on reducing the complications and hospital stay. The outcomes of the research will be utilized by the health care professionals in caring of the clients in surgical units. Specifically, it contributes to the development of the nursing practice, education and research in the field surgical units.

### **Research Objectives**

To assess the level of stress and coping abilities of clients undergoing surgical procedure

### **Specific objectives**

To assess the level of stress among clients who are undergoing surgery.

To examine the coping among clients who are undergoing surgery.

To find out the association between level of stress and coping among clients who are undergoing surgery and their selected demographic variables.

## 2. MATERIALS AND METHODS

### Research Design

This Cross-sectional descriptive study was conducted among the clients who were scheduled to undergo for elective surgery. The study setting includes the hospitals under Ministry of Health from Tabuk (King Khalid Civilian Hospital (KKCH) and King Fahad Specialist Hospital (KFSH) from February 2021 to December 2021.

### Sample

The estimated sample sizes were 250 clients who are planned for a surgical procedure. The study participants were chosen by convenience sampling method based on the inclusion and exclusion criteria. The clients who were in the preoperative phase for diagnostic or treatment were included. The clients who were not interested, posted for emergency surgery and unstable were excluded from the study.

### Instruments

The Perceived Stress Scale (PSS) is the most commonly used psychological tool for assessing the perception of stress (Cohen et al, 1983). It comprises of 10 item in five point Likert scale ranging from never (=0), almost never (=1), sometimes (=2), fairly often (=3), and very often (=4). The Arabic version of the PSS was used and the internal consistency reliability of the Arabic PSS-10 was 0.74 (Chaaya et al., 2010).

The scores were interpreted as per the tool guidelines. The scores in PSS are from 0 to 40. The interpretation of scores as follows: 0-13- low stress, 14-26- moderate stress and 27-40 high perceived stress (Cohen et al., 1983). Coping with surgical stress scale (COSS) were used in this study for measuring the coping. This scale consists of 27 items. This scale consists of rumination, optimism and trust, social and religious resources, threat avoidance and information seeking (Krohne et al., 2000). The tool was translated in to Arabic language and back translation was done in English to check the consistency of the tool. Pilot study was conducted with 5% of the actual sample size from the same hospitals to check the reliability of the tool. The Cronbach's alpha coefficient was 0.81. Permission was obtained for the usage of the tool.

### Data collection method

In the first stage of the study, ethical clearance and permission was taken to conduct the study. Purpose of the study was explained and consent was taken from the participants. Questionnaire was administered with the following sections, demographic variables, PSS and COSS. The collected data was coded in SPSS version 26. Descriptive and inferential statistical analysis was used to answer the research objectives.

### Ethical considerations

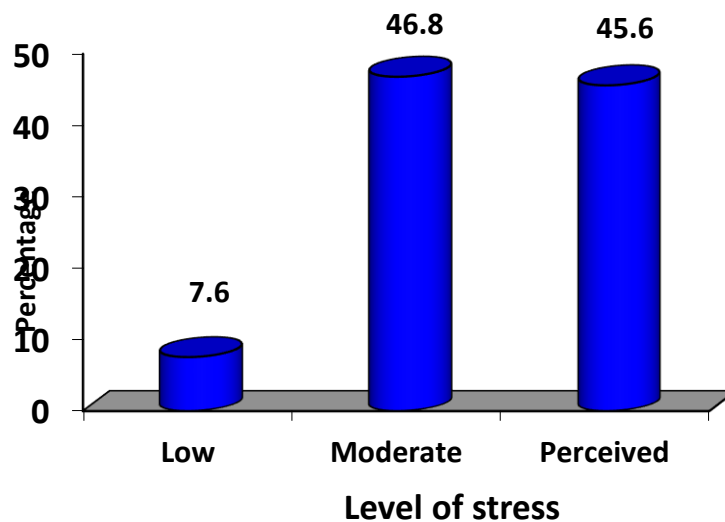
The study was approved by the University of Tabuk Local Ethical Committee (UT-130-09-2021). Confidentiality and anonymity of participants was maintained. The participants were given adequate information about the study. Consent was taken before administering the questionnaire. The participant was informed that the confidentiality of the information, study participation is on voluntary basis and the clients can withdraw at any time from the study.

## 3. RESULTS

Table 1 describes the demographic profile of the clients who were participated in the study. The largest group in the study was clients between 21-30 years (32.8%). More than one fifth of the studies participants consist of 31-40 years age (23.2%). One fifth of the study participants were from 41-50 years age. More male participants (56.4) than female participants (43.6) were participated. 49.2% were married. Most of the participants had secondary education (44.4%) and graduate (42%). 56.4% were employed. More than one third of the participants were not employed (36%). More than half of the participants undergone previous major or minor surgical intervention (54.8%). 47.4% of them were waiting for minor surgery & 52.4 per cent of them were waiting for major surgery.

**Table 1** Demographic variables

Demographic variables	Frequency(n=250)	Percentage
1.Age in years :		
<20	17	6.8
21-30	82	32.8
31-40	58	23.2
41-50	51	20.4
>50	42	16.8
2.Gender:		
Male	141	56.4
Female	109	43.6
3.Marital status :		
Married	123	49.2
Unmarried	127	50.8
Widow	0	0
Divorced	0	0
4.Education:		
Not educated	12	4.8
Primary	17	6.8
Secondary	111	44.4
Graduate	105	42.0
Post graduate	5	2.0
5.Employment:		
Unemployed	90	36
Self employed	19	7.6
Employed	141	56.4
6.Type of surgery:		
Minor	119	47.6
Major	131	52.4
7. Any previous surgery:		
Yes	113	45.2
No	137	54.8



**Figure 1** Distribution of stress level among the clients

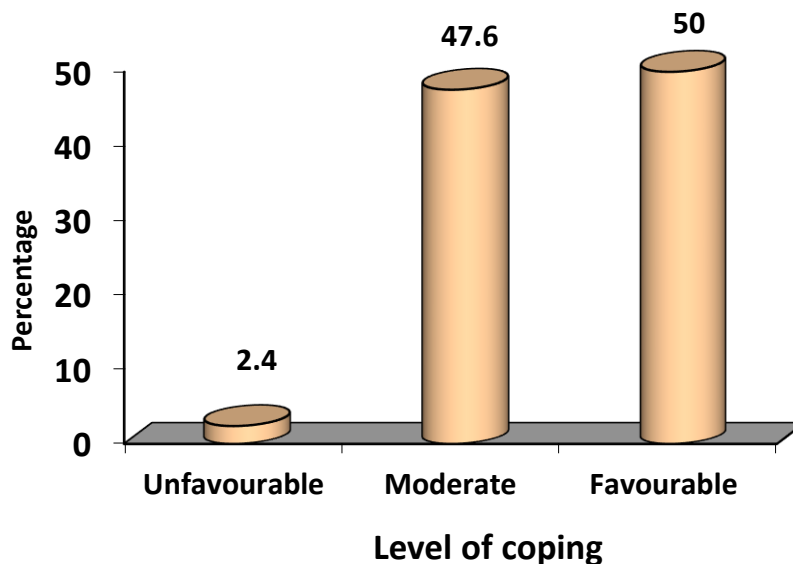
**Table 2** Area wise Mean, SD and mean% of stress level of clients undergoing surgical procedure.

Level of stress	Max. score	Range	Mean	SD	Mean%
Overall	40	39-0	24.38	8.244	61

In figure 1, 45.6% of the participants had perceived level of stress in PSS. 46.8% of them had moderate level of stress and less than one tenth of the study participants had low level of stress. In table 2, overall mean stress level was 24.38 with the SD of 8.244 in PSS scale. This indicates the nearly half of the participants had perceived stress level before surgery.

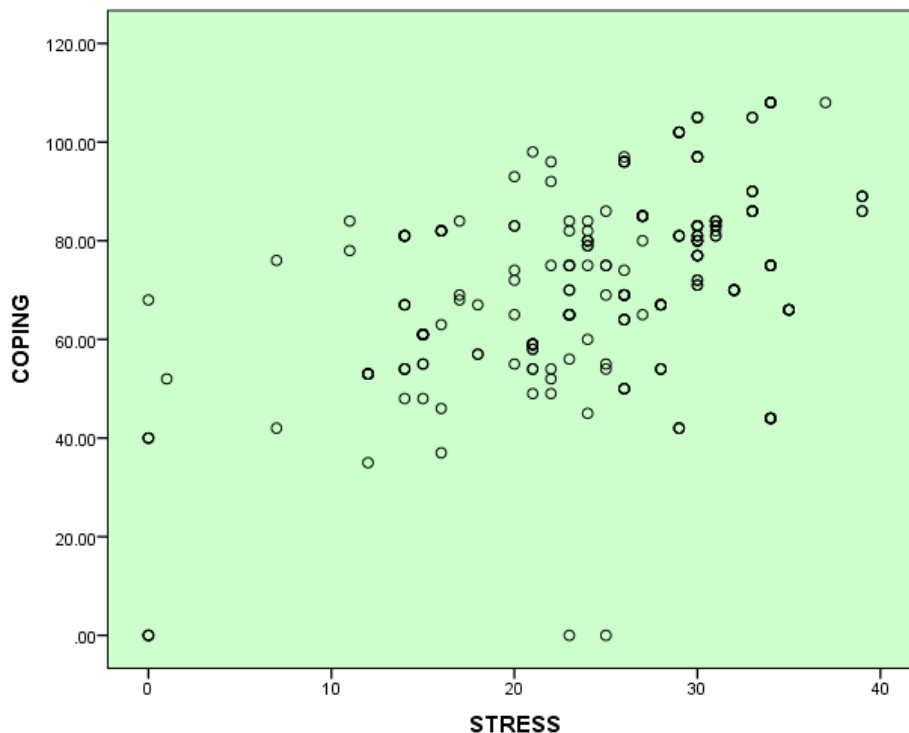
**Table 3** Area wise Mean, SD and mean% to assess the level of coping abilities of clients undergoing surgical procedure.

Level of coping	Max. score	Range	Mean	SD	Mean%
RUMINATION (RU)	24	24-0	14.94	5.088	62.25
OPTIMUN AND TRUST (OT)	24	24-0	15.66	5.01	65.25
TURNING TO SOCIAL AND RELIGIOUS (SR)	24	24-0	16.53	5.13	68.87
THREAT AVOIDANCE (TA)	24	24-0	16.08	5.12	67
INFORMATION SEEKING (IS)	12	12-0	7.99	2.58	66.58
Overall	108	108-0	71.2	19.26	65.93



**Figure 2** Level of coping abilities of clients undergoing surgical procedure.

In figure 2, the interesting outcome of the study showed that 50% the participants were used favourable level of coping abilities. 47.6% of them had moderate coping strategies. Only 2.4% of the participants were used unfavourable coping abilities. This indicates that the half participants were used reasonably adequate coping strategies. Table 3, indicates that the greater number of participants had used Turning to Social and Religious coping styles (68.87%), and lowest preferred style was rumination (62.25%). However, all the subsections in the coping scale were considered by the participants in managing stress before going to the surgical intervention.



**Figure 3** correlations between stress and coping among the preoperative clients

Figure 3 identifies the relationship between the participants stress level and coping abilities in the preoperative period. The preoperative clients had significant average positive linear relationship between the stress on PSS scale and coping in COSS scale ( $r=0.48, P=.000$ ). This shows that whoever had considerably high scores on the stress scale used reasonably favourable coping methods without any intervention for stress. There is a necessity of intervention to reduce preoperative stress to increase the coping level.

**Table 4** Mean difference of stress and coping subsections of COSS between age group

	Age in years (Mean ± SD)					F-value	P-Value
	<20 Years (n=17)	21-30 years (n=82)	31-40 years (n=58)	41-50 years (n=51)	>50 years (n=42)		
Stress	30.71±10.1	20.84±8.77	27.67±4.51	24.92±8.1	23.52±7.42	10.03	P<0.001 ***(HS)
(RU)	14.41±5.14	12.39±5.82	14.90±3.09	17.45±3.62	17.12±4.98	12.04	P<0.001 ***(HS)
(OT)	13.71±3.96	15.21±6.29	16.59±3.75	17.18±4.65	14.24±3.74	3.448	P=0.009** (HS)
(SR)	18.24±5.96	16.38±6.18	16.10±3.66	17.51±5.21	15.55±3.97	1.445	0.220(NS)
(TA)	17.29±5.28	14.91±6.12	16.59±4.27	17.14±4.40	15.88±4.56	2.029	0.091(NS)
(IS)	7.88±2.62	7.10±3.16	8.10±2.31	8.88±1.92	8.52±1.79	4.72	P=0.001** (HS)
Coping-Overall	71.5±17.7	65.9±23.8	72.27±13.79	78.16±17.01	71.3±16.38	3.332	0.01(S)

(HS-Highly significant, NS-Non significant)

Table 4 indicates higher stress level on PSS among the 31-40 years age group (27.67±4.51) and below 20 years age group (30.71±10.1). Rumination coping subscale was used by the age group 41 years and above. Optimism and trust were more commonly

used by 41-50 years age group. Social and religious coping sub scale was used by all the age group at the highest level. In general, significant difference was observed among the age groups in terms of stress ( $F=10.03, P<0.001$ ) and overall coping ( $F=3.332, P=0.01$ ).

**Table 5** Mean difference of stress and coping subsections of COSS between male and female clients

	Gender ( Mean ± SD)		t-value	P-Value	Cohen’s d (Effect size) 95% CI (UL-LL)
	Male (n=141)	Female (n=109)			
Stress	25.35±8.42	23.13±7.87	2.12	P=0.035*(S)	0.269(0.52-0.02)
(RU)	15.35±5.86	14.39±3.83	1.483	P=0.139(NS)	0.188(0.43-(-0.06))
(OT)	16.79±5.64	14.21±3.61	4.158	P<0.001***(S)	0.51(0.75-0.27)
(SR)	17.29±5.66	14.73±3.66	5.106	P<0.001***(S)	0.62(0.86-0.38)
(TA)	17.15±5.57	14.70±4.12	3.852	P<0.001***(S)	0.48(0.722-0.233)
(IS)	8.24±2.97	7.66±1.93	1.77	P=0.078(NS)	0.22(0.47- (-0.12))
Coping-Overall	75.45±22	65.69±13.01	4.096	P<0.001***(S)	0.51(0.75-0.27)

S-Significant, NS-Not Significant

Table 5 points that male participants had more stress on PSS scale than female participants and higher level of coping observed among male participants. Significant differences were observed between gender and stress ( $t=2.12, P=0.035$ ) and overall coping ( $t=4.096, P<0.001$ ). Significant differences observed between gender and three coping subsections (Rumination, Social and religious, threat avoidance). This study identified the significant association between the stress level and marital status ( $\chi^2-11.261, P= 0.004$ ), employment ( $\chi^2-10.36, P=0.035$ ) and education ( $\chi^2-21.12, P=0.007$ ). This study identified the significant association between the coping level and marital status ( $\chi^2-13.84, P=0.001$ ), employment ( $\chi^2-20.77, P<0.001$ ) and previous surgical history ( $\chi^2-10.56, P=0.005$ ).

#### 4. DISCUSSION

Psychological stress produces physiological changes of the body with nervous, body fluids and immunological systems (Basu et al., 2022). Stress level and anxiety in the preoperative period associated with complications after cardiac surgery (Rosiek et al., 2016). Preoperative stress causes longer stay in the hospitals, surgical complication and higher rate of readmission (Rosenberger et al., 2006). The current study reported that 45.6% of the preoperative clients had higher level of stress in the PSS scale. The prevalence rates reported in the previous studies vary at different rate. Some of the studies had reported high prevalence rate: 65.7% of clients showed upper-middle symptoms of state anxiety prior to surgery in a study from Iran (Barkhori et al., 2021), 48% of clients reported high prevalence stress on PSS among the cardiac preoperative clients in a study from Poland (Rosiek et al., 2016), 43.8% of the clients with highest prevalence rate of preoperative anxiety in North Wollo Zone, Northeast Ethiopia (Wondmieneh, 2020). Contrastingly lowest rate (30%) of preoperative anxiety scores were reported from study at Jordan University (Aloweidi et al., 2022). Less number studies were focused on the aspect of stress in preoperative, the rest of the studies were focused on anxiety in the preoperative period. These studies were utilised different tools in assessing the preoperative anxiety (Wondmieneh, 2020; Nigussie et al., 2014; Barkhori et al., 2021). There is an emerging need of studies to be focused on the stress dimension in the preoperative period in terms of complications in the post-operative period. There is a necessity of uniform tool in assessing the stress level among the preoperative clients.

The coping level in this study was reported with the mean score of 71.2, SD-19.26 & mean percentage was 65.93. Half of the clients (50%) were using favourable coping strategies in COSS scale, rest of the clients had moderate coping level and few are unfavourable. These results were better than the result of a study from Ludhiana, which was reported maladaptive coping before the structured teaching program (87.67%) (Swapna Melchisedec & Parmjit Kaur, 2018). More than two third (66.58%) of the clients reported that they were using information seeking coping strategies to overcome the stress. Similarly, the information seeking is the best coping was chosen by the clients in a study from German (Aust et al., 2016). More than half (59%) of the study participants seek support due to preoperative distress. Larger population among the study participants in a study from south-western Ethiopia did not receive proper information prior to surgery. In this study the information prior to surgery produced significant reduction preoperative anxiety (Nigussie et al., 2014). Similarly, a study from Pakistan reported that the clients were used information seeking plays an important role in surgical anxiety (Rashid & Riaz, 2021).

The following factors were found as significant predictors of stress among the preoperative clients: age, gender and marital status, employment and education. Male participants had higher stress than the female participants. But other previous studies from Iran, Ethiopia and Saudi Arabia reported that the female gender reported significant preoperative anxiety (Nigussie et al., 2014; Barkhori et al., 2021; Rosiek et al., 2016; Almalki et al., 2017). Age, history of operation, previous hospitalizations and type of surgery were not related with preoperative anxiety in an Ethiopian study (Nigussie et al., 2014). In a study from Saudi Arabia these factors were found as significant predictors for preoperative anxiety prior to elective surgery (Almalki et al., 2017). In this study type surgery & past surgical history has no significant association with the preoperative stress in PSS. Similarly, results were observed with cardiac patients by Rosiek et al., (2016). But a study from Saudi Arabia reported with the significant association between preoperative stress and type of surgery (Almalki et al., 2017). Higher anxiety scores were observed between the specialties and preoperative anxiety scores, higher scores were observed with oncology followed by obstetrics and gynaecology (Aloweidi et al., 2022).

In this study age, gender, marital status, employment and history of previous surgery were the predictors of coping level among the preoperative clients. Male participants had better coping than female participants. 41-50 years had better coping scores than other age group. Similarly older and well-educated clients in preoperative period showed good coping skills (Szymoniak, 2020). Contrastingly none of the demographic pattern associated with the coping in managing the surgical anxiety in German study (Aust et al., 2016). In this study male participants had significantly higher coping is Rumination, Social and religious, threat avoidance subsections in COSS, but similar study from Pakistan revealed no significant difference between gender and COSS subsections (Rashid & Riaz, 2021). Pomeranian Medical University in Szczecin reported that the women in preoperative period used avoidance coping style (Szymoniak, 2020). Statistically significant positive linear correlation is between the preoperative stress and coping among the preoperative clients. Similar moderate correlation between surgical anxiety and coping was observed from a study from Pakistan (Rashid & Riaz, 2021). Stress management interventions before surgery produced greater outcomes like improved clinical outcomes, less complications and short hospital stay (Montgomery et al., 2002).

### **Recommendations**

Preoperative teaching program is the most influential factor in improving the coping level of the preoperative clients. The nursing health education plan need to be individualised based on the stress level and contributing factors. It is also mandatory to measure the stress level and coping in the preoperative period. There should be an appropriate mechanism to assess the level of stress in the preoperative period. The assessment instrument needs to incorporate along with the patient nursing care plan. Each individual responds and reacts differently to stress and develop coping mechanism accordingly. There is a necessity of further studies in future to be focused on this field which helps to enhance the surgical outcome. The future research can be focused on preoperative stress level, post-operative response and preoperative teaching interventions on stress level. Most of the literatures focused on the anxiety before surgery. There is necessity of studies to be focused in stress dimension rather than anxiety.

## **5. CONCLUSION**

In this study preoperative clients had shown moderate and perceived stress and Perceived Stress Scale (PSS). So, it indicates the level of stress is high. There was significant average correlation between the stress level and coping was observed. Half of the clients were in preoperative stress able to adopt the coping mechanisms.

### **Ethical approval**

The study was approved by the local research ethical committee, University of Tabuk (UT-130-09-2021).

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### **Conflicts of interest**

The authors declare that there are no conflicts of interests.



**Data and materials availability**

All data associated with this study are present in the paper.

**REFERENCES AND NOTES**

- Almalki M, Hakami O, Al-Amri AM. Assessment of preoperative anxiety among patients undergoing elective surgery. *Egypt J Hosp Med* 2017; 69: 2329-34. doi: 10.12816/041537.
- Aloweidi A, Abu-Halaweh S, Almustafa M, Marei Z, Yaghi S, Hababeh L, Al-Gallab N, Al-Jaberi S, Ghattas L, Alrabadi SR, Al-Oweidi A, Bsisu I. Preoperative Anxiety among Adult Patients Undergoing Elective Surgeries at a Tertiary Teaching Hospital: A Cross-Sectional Study during the Era of COVID-19 Vaccination. *Healthcare (Basel)*. 2022; 10(3):515. doi: 10.3390/healthcare10030515.
- Arabul M, Kandemir A, Celik M, Torun S, Beyazit Y, Alper E. Impact of video information before unsedated upper gastrointestinal endoscopy on patient satisfaction and anxiety: A prospective randomized trial. *Gastroenterol Review* 2013; 1:44–9. doi: 10.5114/pg.2013.34182.
- Aust H, Rüsç D, Schuster M, Sturm T, Brehm F, Nestoriuc Y. Coping strategies in anxious surgical patients. *BMC Health Serv Res* 2016; 16:250. doi: 10.1186/s12913-016-1492-5.
- Barkhori A, Pakmanesh H, Sadeghifar A, Hojati A, Hashemian M. Preoperative anxiety among Iranian adult patients undergoing elective surgeries in educational hospitals. *J Educ Health Promot* 2021; 10:265. doi: 10.4103/jehp.jehp\_815\_20.
- Basu S, Goswami AG, David LE, Mudge E. Psychological Stress on Wound Healing: A Silent Player in a Complex Background. *Int J Low Extrem Wounds* 2022: 15347346221077571. doi: 10.1177/15347346221077571.
- Chaaya M, Osman H, Naassan G, Mahfoud Z. Validation of the Arabic version of the Cohen Perceived Stress Scale (PSS-10) among pregnant and postpartum women. *BMC Psychiat* 2010; 10:111. doi: 10.1186/1471-244X-10-111.
- Chhari N., Mehta SS. Stress among patients during hospitalisation: A study from central India. *Ntl J community Med* 2016; 7(4): 274-277.
- Cohen S., Kamarck T., Mermelstein R A. global measure of perceived stress. *J Health Soc Behav* 1983; 24(4):385-96.
- Ebrecht M, Hextall J, Kirtley LG, Taylor A, Dyson M, Weinman J. Perceived stress and cortisol levels predict speed of wound healing in healthy male adults. *Psycho neuroendocrinol* 2004; 29(6):798-809. doi: 10.1016/S0306-4530(03)00144-6.
- Ismail S, Khan FA, Ahmed A, Shah KA. Premedication in surgical day care patients. *J Pak Med Assoc* 2007; 57(1):37-8.
- Krohne HW, De Bruin JT, El-giamal M, Schmukle SC. The assessment of surgery-related coping: The Coping with Surgical Stress Scale (COSS). *Psychol Health* 2000; 15: 135-149. doi: 10.1080/08870440008400294.
- Ministry of Health statistics indicators. Saudi Arabia, Ministry of Health; 2020. Available from [www.moh.gov.sa/en/Ministry/Statistics/Indicator/Pages/Indicator-2020.aspx](http://www.moh.gov.sa/en/Ministry/Statistics/Indicator/Pages/Indicator-2020.aspx).
- Montgomery GH, David D, Winkel G, Silverstein JH, Bovbjerg DH. The effectiveness of adjunctive hypnosis with surgical patients: a meta-analysis. *Anesth Analg* 2002; 94(6):1639-45 doi: 10.1097/00000539-200206000-00052.
- Nigussie S, Belachew T, Wolancho W. Predictors of preoperative anxiety among surgical patients in Jimma University Specialized Teaching Hospital, South Western Ethiopia. *BMC Surg* 2014; 14:67. doi: 10.1186/1471-2482-14-67.
- Nikumb VB, Banerjee A, Kaur G, Chaudhury S. Impact of doctor-patient communication on preoperative anxiety: Study at industrial township, Pimpri, Pune. *Ind Psychiatry J* 2009; 18(1):19-21. doi: 10.4103/0972-6748.57852.
- Rashid A, Riaz MN. Impact of preoperative surgical anxiety on postoperative surgical recovery among surgical patients: Role of surgical coping. *J Pak Med Assoc* 2021; 71(10):2313-2316. doi: 10.47391/JPMA.07-787.
- Rosenberger PH, Jokl P, Ickovics J. Psychosocial factors and surgical outcomes: an evidence-based literature review. *J Am Acad Orthop Surg* 2006; 14(7):397-405. doi: 10.5435/00124635-200607000-00002.
- Rosiek A, Kornatowski T, Rosiek-Kryszewska A, Leksowski Ł, Leksowski K. Evaluation of Stress Intensity and Anxiety Level in Preoperative Period of Cardiac Patients. *Biomed Res Int* 2016; 2016:1248396. doi: 10.1155/2016/1248396.
- Swapna Melchisedec & Parmjit Kaur. A quasi study to assess the coping mechanism in preoperative patients undergoing surgery in selected hospitals, Ludhiana. *Int J Infor Res Review* 2018; 05(02):5246-5249.
- Szymoniak K, Rychlicka M, Zimny M, Czechowska K, Powirska-Swęd R, Jurczak A, Ćwiek D. Analysis of the styles of coping with stress in women in the preoperative period. *Pomeranian J Life Sci* 2020; 66(4): 69-72. doi: <https://doi.org/10.21164/pomjlifesci.587>.
- Wetsch WA, Pircher I, Lederer W, Kinzl JF, Traweger C, Heinz-Erian P, Benzer A. Preoperative stress and anxiety in day-care patients and in patients undergoing fast-track surgery. *Br J Anaesth* 2009; 103(2):199-205. doi: 10.1093/bja

/aep136. Epub 2009 May 30. Erratum in: Br J Anaesth 2010; 105(6):878.

23. Wondmieneh A. Preoperative Anxiety and Associated Factors among Adult Elective Surgery Patients in North Wollo Zone, Northeast Ethiopia. Open Access Surg 2020; 13:85-94. doi: 10.2147/OAS.S285562.