

Priprava bolnikov na operacijo

Preparing patients to undergo surgery

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Izvleček

Namen: Zanimalo nas je, s kolišno anksioznostjo in kako se z njo spopada bolnik, medtem ko v bolnišnici čaka na operativni poseg.

Metode: V raziskavo smo vključili 154 bolnikov s štirih različnih kirurških oddelkov. Med njimi je bilo 62 žensk in 92 moških v starosti od 24 do 86 let (s povprečno starostjo $M = 58,8$ let). Uporabili smo naslednje psihološke instrumente: polstrukturiran intervju, The State-Trait Inventory for Cognitive and Somatic Anxiety (STICSA) in The Brief Cope Inventory.

Rezultati: 50 % v raziskavo vključenih bolnikov je izjavilo, da se bojijo operacije, 28 % je strah anestezije ne glede na vrsto anestezije, 54% bolnikov pa je zaskrbljenih, kako bo po operaciji. Ženske so pogosteje izražale strahove in so tudi bile bolj zaskrbljene. Na uporabljenih preizkušnjah so izkazale več znamenj situacijske in stalno prisotne anksioznosti ($M_{as} \pm SD_{as} = 32,58 \pm$

Abstract

Purpose: This study aimed to evaluate patient anxiety levels and ways of coping, while they are waiting in the hospital to undergo surgery.

Methods: One hundred fifty-four patients were included from four different surgical departments (62 females and 92 males), 24–86 years of age (mean age $[M] = 58.8$ years). The following instruments were applied: a semi-structured interview; the State-Trait Inventory for Cognitive and Somatic Anxiety; and The Brief Cope Inventory.

Results: One-half of the patients (50%) expressed a fear to undergo surgery; 28% of the patients said that they were afraid of anaesthesia, regardless of the type of anaesthesia, and 54% of patients expressed a fear and worry about the outcome of surgery. Women ($M_{as} \pm SD_{as} = 32.58 \pm 8.01$; $M_{at} \pm SD_{at} = 35.16 \pm 8.97$; in general, $M_a \pm SD_a = 67.74 \pm 15.44$) had state and trait anxiety significantly more often than men ($M_{as} \pm SD_{as} = 28.11 \pm 6.21$; $M_{at} \pm$

8,01; $Mat \pm SD_{AT} = 35,16 \pm 8,97$; splošno $Ma \pm SD_a = 67,74 \pm 15,44$) kot moški ($M_{as} \pm SD_{as} = 28,11 \pm 6,21$; $M_{at} \pm SD_{at} = 30,29 \pm 7,48$; in general $M_a \pm SD_a = 58,40 \pm 12,74$). V rizično skupino sodijo tudi starejši moški s šibko socialno podporo. Manj pogosto in manj neposredno izražajo svoje potrebe in čustva in so v svojem socialnem okolju manj aktivni v iskanju informacij in nasvetov.

Zaključek: Ni potrebno, da bi bolnike vznemirjale bojazni in skrbi, sploh ker je znano, da zvišan nivo pacientove anksioznosti slabo vpliva na potek in izid kirurškega posega. Prav zato je pomembno, da se bolnikom, ki jih mučijo bojazni in skrbi, omogoči pomoč. Organizirana pre-operativna pomoč zahteva dobro usposobljen negovalni tim, ki razen poznavanja pojava anksioznosti obvlada tudi komunikacijske veščine in tehnike sproščanja.

$SD_{at} = 30.29 \pm 7.48$; in general $M_a \pm SD_a = 58.40 \pm 12.74$). Elderly males fall due to the received weak social support into the risk group of patients. They less often/less directly express their needs and emotions, and are less active in searching for information or advice in the social environment. In stressful situations, elderly males also frequently give up the attempt to obtain the goals with which the stressor is interfering.

Conclusion: Patients who wait to undergo surgery should not suffer anxiety needlessly because it is known that anxiety has a negative impact on the course and outcome of surgical procedures. The pre-operative management of a patient's anxiety is therefore important and a well-educated medical care team should be familiar with the appearance of anxiety, communication skills, and relaxation treatment.

INTRODUCTION

It is recognized that the need to undergo surgery induces greater disturbance and stress than any other medical situation in the hospital, regardless of the type and degree of invasiveness of the surgical procedure. Although surgical procedures vary greatly in the degree of physical intrusiveness, post-operative pain, and discomfort, it should be noted that the stress experienced by patients results not only from physical factors. It is not clear why surgery is stressful, but there are at least three important elements. First, the anaesthetic causes surgical patients to lose consciousness and control, which leads to the fear of not waking up or of being aware and unable to communicate. The second element is the degree of pain anticipated post-operatively as it would be unrealistic to imagine that any surgical procedure could be pain-free. The third element involves the very nature of surgery, i.e., the incision and the opening of flesh and the use of needles and scalpels. It may be that each of these separate elements is stressful, but their unique combination in surgery is particularly difficult to anticipate and cope with (1–3).

Fisher, in a review of the literature, found that even minor surgical procedures could mobilize concerns about body damage that were out of proportion to the real nature of threats (4). Bodley, Jones, and Mather isolated some of the major elements of pre-operative anxiety, as follows: fear of death; concerns about separation from home and family with hospitalization; fear of mutilation; possible loss of control due to the anaesthetic; and concern about the pain that will be experienced (5). Johnson reported very high scores on a standard anxiety measure in patients before surgery (4). Johnson suggested that going into a hospital is worrisome, as well as the operation itself (4). Day surgery can be worrisome, but may cause less anxiety than being admitted as an inpatient (4). Green sampled the behaviour of boys 14–17 years of age hospitalized for emergency appendectomies and classified the nature of body perception and concerns of surgical patients in general into the following six categories: perception of body capability; endurance; intactness; impairment; improvement; and uncertainty (6). Eberim and Tobin reported that the most common reason for anxiety is the possibility of surgery being post-

poned (69.6%), followed by fear that mistakes may be made during the surgical operation resulting in harm to the patient (64%), fear of not receiving enough attention from caregivers (63.2%), and fear of “not waking up” after surgery (58.4%) (6). The respondents were least worried about having post-operative nausea and vomiting (8%). Only 27.1% of male participants and 40.9% of female participants were significantly anxious, but the difference was not statistically significant (6). A subsequent study by Perks, Chakravarti, and Manninen has shown that anxiety and fears are the most prevalent stress-engendered emotion state in patients in the pre-operative phase (7). The prevalence of pre-operative anxiety in adults varies in surveys between 11% and 80% depending on the type of surgery; in the group of oncology patients the prevalence of pre-operative anxiety varies between 60% and 90% (7).

A higher level of pre-operative anxiety was more often observed in women than in men and in young than in older patients (8, 9). The percentages of patients who say that they are afraid of anaesthesia range from 10% to > 60%. Manifestations of anaesthesia-related anxiety are fear of the following: losing consciousness; the unknown; not waking up; dying; induction; the mask, needles, and injections; insufficient anaesthesia; the operation will begin too soon; awareness during the anaesthesia; regaining consciousness too soon; side effects, such as nausea and vomiting, pain, and broken teeth; talking while under anaesthesia; losing control; emotional reactions; appearing ridiculous; abnormal sensations; and not being able to think clearly (10-12).

A link between the extent of surgery and the degree of anxiety was not demonstrated, but it was observed that some types of surgery cause more anxiety than other types of surgery (12). MacKenzie established that patients undergoing oral surgery had higher anxiety scores when patients had a previous unpleasant experience (13). Moerman et al. and Boker et al. reported that the type of surgery is not important in predicting pre-operative anxiety,

while Kindler et al. reported that otolaryngologic and thoracic surgeries are associated with high levels of anxiety, but patients who had at least one prior surgery had lower anxiety levels (10, 14, 15). The results suggest that patients who had earlier undergone another surgery were less anxious because they had less „fear of the unknown.“

Mitchell showed that patients undergoing general anaesthesia were significantly more anxious and desired information prior to surgery than participants undergoing local anaesthesia with sedation (16). When Fitzgerald and Elder asked to rank anaesthesia-related fear, subjects indicated death as the primary fear, followed by pain, intra-operative awareness, nausea with vomiting, and the provider's capacity to offer adequate care (17).

MATERIALS AND METHODS

Objective

The aim of the present survey was to determine what patients experience before undergoing surgery. We anticipate that some patients are in distress, which calls for intervention.

Hypothesis:

- H1. Patients undergoing surgery are afraid of surgery, anaesthesia, and are worried about the outcome of surgical intervention, which is related to gender, age, education, and the living situation (living alone/living with a partner or family member).
- H2. The patients, who expressed fears and worries about surgery, anaesthesia, and/or the outcome of a surgical intervention, show more cognitive/somatic signs of state/trait anxiety than patients who do not express fears and worries about surgery.
- H3. Between the patients with cognitive/somatic signs of state/trait anxiety and patients who do not show such signs, significant differences exist in coping process and strategies.
- H4. The patients who have been recently confronted with the urgency of surgery are more anxious and show more cognitive/somatic signs of

state anxiety than patients who have had time to prepare for the intervention.

- H5. The patients who have experienced more stressors in the past 6 months respond with more signs of anxiety.
- H6. The persons who express a need for information differ in the extent of experience of distress in the past 6 months as a function of gender, age, and education.

Participants

The study cohort was comprised of 154 patients who were awaiting major surgery in 1 of 4 surgical departments at the University Medical Centre Maribor (UKC Maribor, Slovenia). The sample consisted of 62 females and 92 males (age range, 24–86 years; mean age [M], 58.8 years [SD = 14.3]). Most patients (113 [73.4%]) were in the 51–80 year age group. A greater number of participants were retired (63.6%) than employed (36.4%). A greater number of participants had completed secondary school (88 [57.1%]) than higher (38 [24.7%]) or primary education (24 [15.6%]). A small number of participants had incomplete primary education (4 [2.6%]) or were still pursuing an education (2 [1.3%]). A greater number of the participants (133 [86.4%]) live with their partner/family member than live alone (21 [13.6%]).

Measures

During the semi-structured interview, demographics, such as gender, age, level of education, living alone/with family, the extent of perceived stress in the last 6 months, and the amount of time available to prepare for the surgical intervention, were collected. Participants responded to open questions about eventual fears and worries involving surgery, anaesthesia, outcome of surgery, and need for additional information.

Two self-reported psychological inventories were used (the State-Trait Inventory for Cognitive and Somatic Anxiety (STICSA) and the Brief Cope Inventory (B-COPE).

The STICSA (Ree, MacLeod, French, and Locke, 2000) is based on Spielberger's (1966, 1972) theoretical formulation of state and trait anxiety and was designed to assess cognitive and somatic symptoms of anxiety as the symptoms pertain to one's mood at the moment (state anxiety), and in general as a personal characteristic (trait anxiety). Symptoms from the Cognitive Anxiety factor (e.g., "I think the worst will happen;" "I feel agonized over my problems") appear to reflect symptoms of negative affect, whereas symptoms from the Somatic Anxiety factor (e.g., "My heart beats fast;" "My muscles are tense") appear to reflect physiologic hyper-arousal. Each scale is composed of 21 self-report items. Respondents rate each item on a 4-point Likert scale, ranging from 1 (not at all) to 4 (very much; 18).

The B-COPE (Carver, 1997) is based partly on the Lazarus and Folkman model of coping (1984) and partly on the Carver and Scheier model of behavior self-regulation (1981, 1990). The B-COPE comprises 14 scales which are a measure of 14 types of coping based on theoretical arguments about functional and potentially less functional coping strategies, as follows: self-distraction; active coping; denial; substance use; use of emotional support; use of instrumental support; behavioral disengagement; venting; positive reframing; planning; humor; acceptance; religion; and self-blame. Each scale contains two items (a total of 28 items), which were evaluated using a 4-point Likert scale, ranging from 1 ("I haven't been doing this at all") to 4 ("I have been doing this a lot"). Responses range from 1–4, with higher scores indicating a greater use of coping strategy (19, 20).

Statistical analysis

The data were processed with IBM SPSS. Descriptive statistics were first used to gain basic insight in the sample of included patients. Parametric tests, namely The Independent samples t-tests, were used because the variables were normally distributed. One categorical variable (e.g., fear of surgery) was analysed with One sample chi-square test and two categorical variables were analysed with Pearson's chi-square test (21).

RESULTS

Table 1a shows the presence of the fear of surgery, anaesthesia, and surgery outcome by gender. A fear of surgery existed in exactly one-half of the included patients (50%), the fear of anaesthesia was present in 28 % of the patients, and the fear and worries about outcome of surgery affected greater than one-half of the patients (54%).

The results in Table 1a show a trend that the participants were more afraid and worried about the outcome of surgery than the fear of surgery or anaesthesia.

To verify the hypothesis that patients are frightened and worried when awaiting surgical procedures (H1a), One-sample chi-square test showed ($\chi^2(1)=0.000, p> 0.5$) that patients do not frequently express a significant fear about undergoing surgery. As much as patients express fear, patients also deny fear. There were no significant differences with respect to the type of anaesthesia [$\chi^2(1) = 2.27, p> 0.005$]; thus, patients are afraid of anaesthesia in general, but less than surgery itself. Similarly, patients do not frequently express significant fears and worries about the outcome of surgery, which is present in greater than one-half of patients, but One-sample chi-square test showed [$\chi^2(1) = 0.935, p > 0.05$] patients also deny fears and worries about the outcome of surgery.

We tested the association between hypothesis H1 (a fear to undergo surgery) and gender, age, education, and way of living. One-sample chi-square test

confirmed a statistically significant difference in the fear of surgery according to gender [$\chi^2(1) = 8.74, p < 0.005$]; specifically, females frequently express a greater fear of surgery than males.

Pearson’s correlation coefficient showed a statistically significant positive correlation between a fear to undergo surgery and patient age ($r = 0.245, p < 0.001$); specifically, older patients had an increase fear to undergo surgery than younger patients.

Pearson’s chi-square revealed a significant association between the level of education and expressed fear of surgery [$\chi^2(1) = 4.656, p < 0.05$]. Among the patients who deny the existence of a fear of surgery, most have primary and secondary school educations (82.4%), and few patients, who were better able to express themselves, had a higher level of education (17.6%).

Pearson’s chi-square did not demonstrate a statistically significant difference with respect to the expression of fear to undergo surgery [$\chi^2(1) = 0.496, p > 0.05$] between persons living alone and those who are living with a partner or member of family. Of interest, The Independent samples t-tests showed significant differences in the two forms of coping strategies (behavioural disengagement [$t = -2.84, p < 0.005$] and seeking instrumental social support [$t = 1.96, p < 0.05$]) between patients who live alone and those with a partner or family member. Patients who live alone seek information or advice less often ($M \pm SD = 5.48 \pm 1.56$) than patients who do not live alone ($M \pm SD = 6.09 \pm 1.29$). When in distress, patients who live alone rarely use coping strategies

Table 1. Patient fears and worries prior to and after surgery N= 154

Gender	Are you afraid to undergo surgery?					Are you afraid of anesthesia?					Are you worried about the outcome of surgery?				
	Female		Male		Total	Female		Male		Total	Female		Male		Total
	f	%	f	%	%	f	%	f	%	%	f	%	f	%	%
Yes	40	26	37	24	50	23	15	20	13	28	40	26	43	27	54
No	22	14.3	55	35.7	50	39	25	72	47	72	22	14	49	32	46
Total	62	40.3	92	59.7	100.	62	100.	92	100.	100.	62	100.	92	100.	100.

(“I’ve been trying to get advice or help from other people about what to do”). The persons who live with family seem to be more spontaneous in seeking social support. In addition, patients who are living alone use behavioral disengagement ($M \pm SD = 4.14 \pm 1.59$) as a coping strategy more frequently than patients who live with a partner or family ($M \pm SD = 3.18 \pm 1.41$). According to those who live with their family, this group of patients more often expects poor coping outcomes and frequently feel helpless (“I’ve been giving up trying to deal with it”). Hypothesis H1 was confirmed with respect to gender, age, and education, but not with respect to the way of living. There were no differences in the expressed fear to undergo surgery, rather the coping strategies used.

According to hypothesis H2, patients who expressed fear and worries about surgery, anaesthesia, and/or outcome of surgery show more cognitive/somatic signs of state/trait anxiety than patients who do not express fear and worries; t-tests showed a statistically significant difference in signs of a state anxiety. Patients who expressed a fear to undergo surgery ($t = 6.582, p < 0.001$), a fear of anaesthesia ($t = 3.906, p < 0.001$), and worries about the outcome of surgery ($t = 4.685, p < 0.001$) show more signs of a state anxiety on STICSA in comparison to patients who do not express fears.

Testing hypothesis H3 in which patients with higher versus those with lower cognitive/somatic signs of state and trait anxiety revealed significant dif-

ferences in the coping process and strategies. We found statistically significant differences in three coping strategies between the patients with a higher and lower extent of cognitive/somatic signs of state anxiety (self-distraction [$t = 5.409, p < 0.000$], denial [$t = 3.060, p < 0.003$], and behavioral disengagement [$t = 1.996, p < 0.05$]) and trait anxiety (self-distraction [$t = 5.755, p < 0.000$], denial [$t = 4.693, p < 0.000$], and self-blame [$t = 3.587, p < 0.000$]). The first three types of coping strategies, as shown in Table 2, are frequently used by patients with high cognitive and somatic signs of state anxiety. The patients whose anxiety is not only situationally-triggered, but is a part of their personality traits (trait anxiety), except the three coping strategies in stressful circumstances, also used self-blame.

According to hypothesis H4, patients who have been recently confronted with the urgency of surgery show more cognitive/somatic signs of state anxiety than patients who have had time to be prepared for intervention; data were analyzed with The Independent samples t-tests; there were no significant differences in the signs of state anxiety in the STICSA between those patients who have been confronted with the necessity of surgery the week before [($t = 1.730, p > 0.05$) - ($M_{ac} \pm SD_{ac} = 16.25 \pm 5.48; M_{as} \pm SD_{as} = 16.06 \pm 4.78; M_a \pm SD_a = 32.31 \pm 9.70$)] and those who were confronted with the necessity of surgery a year or more earlier [($t = 1.819, p > 0.05$) - ($M_{ac} \pm SD_{ac} = 14.23 \pm 3.31; M_{as} \pm SD_{as} = 14.35 \pm 3.24; M_a \pm SD_a = 28.58 \pm 5.76$)]. Therefore, hypothesis H4 was not confirmed. The time

Table 2. Level of state and trait anxiety signs and presence of coping strategies

C-s	Level of State Anxiety				Level of Trait Anxiety			
	High	Low			High	Low		
	M±SD	M±SD	t	p	M±SD	M±SD	t	p
A	6.23±1.63	4.62±2.07	-5.409	0.000	6.32±1.72	4.59±1.97	-5.755	0.000
B	3.66±1.68	2.89±1.35	-3.060	0.003	3.90±1.69	2.74±1.41	-4.693	0.000
C	3.60±1.71	3.10±1.24	1.999	0.048	3.84±1.54	2.95±1.15	-3.608	0.000
D					4.62±1.84	3.64±1.54	-3.578	0.000

N=154; M-arithmetic mean; SD-standard deviation; t- values; p- level of significance; C-s= coping strategies:

A= self-distraction; B= denial; C= behavioural disengagement; D= self-blame

Table 3. Level of cognitive and somatic anxiety (STICSA)

Anxiety signs	State Anxiety	Trait Anxiety	Total
	M±SD	M±SD	M±SD
Cognitive	14.94 (± 4.24)	16.32 (±4.98)	31.26 (±8.63)
Somatic	14.97 (± 3.81)	15.93 (± 4.42)	30.90 (7.61)
Total	29.91 (±7.30)	32.25 (± 8.43)	62.16 (± 14.58)
Gender			
Female	32.58 (±8,01)	35.16 (±8.97)	67.74 (±15.44)
Male	28.11 (±6.21)	30.29 (±7.48)	58.40 (±12.74)

N=154; M-arithmetic mean; SD-standard deviation

period to prepare for surgery intervention did not affect the expression of state anxiety.

According to hypothesis H5, we assumed that those patients who had experienced more stressful time in the past responded to the pre-operative situation with more signs of anxiety. The t-tests showed that between patients who experienced more stress during the last 6 months ($M_{ac} \pm SD_{ac} = 16.72 \pm 4.80$; $M_{as} \pm SD_{as} = 16.98 \pm 4.44$; $M_a \pm SD_a = 33.70 \pm 8.41$) and those who experienced less stress ($M_{ac} \pm SD_{ac} = 14.01 \pm 3.60$; $M_{as} \pm SD_{as} = 13.91 \pm 2.95$; $M_a \pm SD_a = 27.92 \pm 5.76$) were significantly different ($t = 5.018$, $p < 0.001$). Patients with more stress before surgery (34.4%) demonstrated a statistically significant higher level of state anxiety. Hypothesis H5 was also confirmed.

According to hypothesis H6, we assumed that patients who express a need for further information, differ in the extent of distress in the past 6 months by gender, age, and education. Among those patients who have expressed (34.4%) and those who have not expressed the need for further information (65.6%), a Pearson's chi-square test showed no statistically significant difference in the category of perceived stress in the last 6 months [$\chi^2(1) = 1.878$, $p > 0.05$]. Thus, the need for more information before surgery does not depend upon past distress. Hypothesis H6 was confirmed in the gender category. Among patients who express a need for more information (13.6%), women were represented to a greater extent than men. Pearson's chi-square was statistically significant [$\chi^2(1) = 4.737$, $p < 0.05$], and

an important link between gender and the expression of a need for information was revealed. Gender differences were not only present with respect to the greater need for information, but were also reflected in the expressed state and trait anxiety, as shown in Table 3.

The Independent samples t-test showed that the state and trait anxiety were significantly different between men and women ($t = 4.092$, $p < 0.001$). Thus, female patients have a significantly higher level of state anxiety, a higher level of trait anxiety, and even more cognitive/somatic anxiety disorders ($M_a \pm SD_a = 67.74 \pm 15.44$) than male patients.

As shown in Table 4, gender differences also appeared in coping strategies. The Independent samples t-tests showed that men and women differed in two coping strategies (self-distraction [$t = -2.996$, $p < 0.003$] and seeking solace in religion [$t = 3.399$, $p < 0.001$]). Women ($M \pm SD = 5.89 \pm 2.04$) compared to men ($M \pm SD = 4.90 \pm 1.97$) frequently used coping strategies (self-distraction, as well as frequently seeking solace in religion [$M \pm SD = 4.27 \pm 2.12$]).

The Independent samples t-tests showed no statistically significant difference in the need for more information and the category age ($t = 0.301$, $p > 0.05$). Patient age did not influence his/her need for information. We also examined the link between the patient's need for more information and his/her education. Pearson's chi-square test was statistically significant [$\chi^2(1) = 4.654$, $p < 0.05$], thus the higher

Table 4. Gender and coping strategies in stressful situations

Coping strategies	Gender	N	M	SD	t	p
Self-distraction	m	92	4.90	1.973	- 2.966	0.003
	f	62	5.89	2.041		
Active coping	m	92	6.77	1.491	- 0.336	0.737
	f	62	6.85	1.524		
Denial	m	92	3.01	1.486	-2.014	0.460
	f	62	3.52	1.586		
Substance use	m	92	2.52	1.227	0.172	0.864
	f	62	2.48	1.490		
Use of emotional support	m	92	6.77	1.604	-1.399	0.164
	f	62	7.13	1.476		
Use of instrumental support	m	92	5.90	1.375	-1.173	0.242
	f	62	6.16	1.296		
Behavioral disengagement	m	92	3.17	1.298	-1.416	0.181
	f	62	3.52	1.696		
Venting	m	92	4.82	1.833	- 0.847	0.398
	f	62	5.06	1.726		
Positive reframing	m	92	6.88	1.481	-0.164	0.870
	f	62	6.92	1.394		
Planning	m	92	6.12	1.561	-0.460	0.646
	f	62	6.24	1.705		
Humor	m	92	4.35	1.812	0.485	0.629
	f	62	4.21	1.611		
Acceptance	m	92	7.15	1.325	0.015	0.076
	f	62	7.50	1.083		
Religion	m	92	3.20	1.793	-3.399	0.001
	f	62	4.27	2.121		
Self-blame	m	92	3.95	1.660	-0.813	0.418
	f	62	4.18	1.842		

N=154; M-arithmetic mean; SD-standard deviation; t-values; p-level of significance

a patient's level of education, the greater his/her need to be well-informed as a patient.

DISCUSSION

The aim of the current study was to determine how patients experience the time before surgery. Among patients who are awaiting surgery, 50% expressed a fear of surgery, 28% had a fear of anaesthesia (regardless of type), and 54% of the patients worried about the success of surgery. Among those who

openly expressed a fear of surgery, women were affected more often. Age influences the appearance of fears. With increased patient age, the fear of surgery also increased. This finding is understandable because the occurrence of various chronic diseases and possibility of surgical complications increases with age.

The level of education was shown to affect the expressed fears. Patients with a low education were frequently afraid to undergo surgery compared to

patients with a higher education. Patients with a higher level of education expressed a need for more information. This leads us to conclude that the individuals with a higher level of education may more accurately estimate the risk of surgery; however, the individuals with low levels of education may have a fear of the unknown, and therefore have high levels of anxiety.

Living alone/with a partner or family member did not have a significant impact on the occurrence of fears and worries about surgery; however, living status had a significant impact on seeking social support. Specifically, patients who were living with partners or family members were more proactive and agile.

The patients who expressed a fear of surgery also had a high level of cognitive-somatic signs of state and trait anxiety. Female dominated in both forms of anxiety.

The available time for accepting the necessity of surgery did not affect the level of state anxiety; however, the time is affected by the experience of stress in recent time periods. Patients who experienced recent stress had higher levels of state anxiety, and were therefore not prepared for upcoming surgery. It is interesting that those who experienced recent stressors and had higher levels of state anxiety did not have an increased urgency for information as one would expect according to published research findings (19). We may assume that rather than extensive explanations about surgery and anaesthesia, such patients need emotional support.

In general, a need for more information was dominant among women; age did not play an important role. The need to be better informed significantly more often occurs in the group of patients with higher education than among patients with a lower level of education.

The same findings have been reported (10). Indeed, anxious patients might derive great benefit from

more attention and information, but devoting attention to their fears takes time, and time in clinical practice is in short supply. In addition, not all patients were equally anxious and additional support and information was not present in everyone. On the basis of a meta-analysis, it has been established that approximately 17% of patients have a negative attitude or lack of interest toward information (10). In contrast, 86% of the patients in the current study had a negative attitude or lack of interest in additional information. It was concluded that extensive information is not always useful in clinical practice (10). Thus, the patients with a suppressive coping style, as in our patients, may become anxious when they are confronted with extensive information compared to patients who used a monitoring coping style and become anxious when they are not provided with as much information as they want (10).

Other important data related to coping strategies. Compared to men, women in distress used a coping strategy, such as self-distraction or seeking solace in religion. Self-distraction, as a coping strategy, could be defined as any activity that turns a patient's attention away from a stressor and toward thoughts or behaviours that are unrelated to the stressor (e.g., daydreaming, escaping through sleep, eating, going to movies, watching TV, reading, shopping, and going out). Because it involves minimizing the emotional distress related to a stressor, it could be considered as a type of emotion-focused coping. Such coping strategies have also been categorized as passive coping, a type of coping that is associated with helplessness (20, 22). In circumstances in which active coping efforts are necessary to yield good outcomes is maladaptive, but in many situations it can also be productive. With temporary distractions, someone will eventually return to the feelings they were having. In the transition period, the intensity of uncomfortable emotions (fear, anger, sadness, and shame) may decrease, making management of emotions easier ("I've been turning to work to take my mind off things;" "I decided to call a friend"). Focusing on an external object (fish

in an aquarium) or imagining a peaceful place (forest, meadow, or sea coast) may be used to cope with pain and discomfort during medical procedures. Other examples of useful distractions include day-dreaming or engaging in substitute activities to keep one's mind from ongoing stressors related to chronic pain (20, 22).

Female patients in distress use religious beliefs as a source of emotional support more often than men. As an agent for positive reinterpretation and growth ("I've been trying to find comfort in my religion or spiritual beliefs"), it can be useful. When individuals become heavily dependent and delegate their stress on God without taking personal responsibility, such behaviour becomes non-productive and defers coping style (23).

Patients with a high level of state anxiety have coping skills, which are usually associated with low self-esteem and feelings of helplessness. Stress situations are emotionally-focused and passive. In most situations, maladaptive coping with strategies are self-distraction, denial, and behavioural disengagement. The patients who constantly experience anxiety (trait anxiety) use anxiety as a strategy for self-blame ("I have been blaming myself for things that happened"). In the situations over which they have no more control, as is the case during hospitalization and a surgery, they use the cognitive and behaviour strategies of distraction, denial, and disengagement ("I have been refusing to believe that it has happened;" "I have been giving up the attempt to cope") and self-blame.

The patients who live alone in comparison to those who live with a partner or family member in stressful situations do not seek social support and are not focused on problem solving. They less often and less directly express their needs and emotions, and are less active in the searching for information or advice in their social environment. Consequently, they receive poor social support and mostly passively accept a reality. This mean that they frequently giving up the attempt to obtain the goals with

which the stressor is interfering ("I have been giving up the attempt to cope").

Most of our results are in agreement with other studies (7, 8, 24–27). In fact, we found that 50% of patients directly expressed a fear to undergo surgery (11%–80%, depending on the type of surgery), 28% of patients were afraid of anaesthesia (10% to > 60%), and 54% of patients were afraid and worried about the surgery outcome. Fears and worries about the consequences of surgery can be due to a fear of alteration in the appearance of the body (mastectomy), fear of loss of sexual life (prostate surgery or hysterectomy), of being blind (cataract operation), death (cardiac surgical procedures), post-operative pain (orthopaedic surgery), being dependent on family and friends (brain tumor surgery), and many other reasons (28–30).

It must be taken into account that people may also negate their negative emotions, and therefore the number of patients who fear surgery, anaesthesia, and the outcome of surgery could be in our socio-cultural environment could be higher.

In general, anxiety is an unpleasant emotional state of tension, restlessness, fears, and worries, and could lead to lower self-esteem and to feelings of helplessness. Consequently, a passive, unproductive coping style, reduces patient adherence to medical treatment, and may lead to abnormal hemodynamics as a consequence of sympathetic, parasympathetic, and endocrine stimulation, and affect anaesthesia during surgical procedures as postsurgical recovery. It has been shown that pre-operative anxiety correlates with high post-operative anxiety, increased post-operative pain, analgesic requirements, and prolonged hospital stay. Anxiety may adversely influence anaesthetic induction and patient recovery, as well as decrease patient satisfaction with the peri-operative experience (31). It was found that patients with a high level of pre-operative anxiety had a greater degree of average intra-operative movement and also required a greater amount of anesthetic agents to maintain a clinically acceptable level of

sedation in comparison with patients who had less pre-operative anxiety (32).

Therefore, proper management of fear and anxiety is of great importance. Specially educated medical staff may provide better pre-operative assessment, less pharmacologic pre-medication, smoother induction, and an even better outcome (32–34). Many interventions are possible, ranging from supplying information, giving relaxation exercises, hypnosis, and psychological interventions. Providing information in written or video form could help better prepare the patient for what lies ahead, and consequently reduce anxiety. As our data also showed (86% of included patients had a negative attitude or lack of interest in information), the patients did not require the same amount of information. A distinction could be made between those who want information and those who do not want information (10, 19, 27). Psychological preparation prior to surgery is not beneficial for all patients, especially, when a patient's self-defense system dominates a mechanism of avoidance and denial that could be a non-productive choice of helping. The interventions to reduce anxiety can be effective only when they occur with the patient's coping style (34, 35). This was taken into consideration in our sample, in which anxiety and a passive coping style was observed.

More than delivering extensive information or providing psychological therapy, it may be of help to give pragmatic instructions, simple psychological interventions, breathing and relaxation exercises, hypnosis, therapeutic touch, using intraoperative music, which may help patients achieve appropriate depths of sedation with significantly lower levels of propofol, shorter induction times of sedation, and greater satisfaction (36).

We are aware of the limitations in the current study. In planning further research regarding patients' emotional states before surgery it would be useful to define the type of surgery (elective, urgent, and emergent), the number of previous surgeries,

personal and family member experiences, focus on the specific surgical procedure (hysterectomy, prostate surgery, and mastectomy), and to record all existing specific patient fears. In further surveys it will be useful to evaluate the impact of pre-operative anxiety to anaesthesia, surgery outcome, and the post-surgical period. Nevertheless, our research offers a lot of challenges for further exploration of this topic.

CONCLUSION

Our research provides good insight into demographic-related anxiety and coping with stress during the pre-operative time. We identified high-risk groups of patients in the current study. In our environment, women and older men were at risk of a fear of surgery, especially those with less education and those who lived alone and had poor social support. Such patients need more information and emotional social support. Such an approach should include positive communication techniques with touch and eye contact and the principles of active listening. Although patients and anaesthesiologists usually meet only briefly, this contact is extremely important. A well-educated nursing staff is also important during the pre-operative period in patients with high anxiety to reduce anxiety and give the patient a more positive surgical experience, such as the expression of fear, combined with breathing exercises, visualization, and relaxation techniques.

Ethical standards: The study has been performed in accordance with the ethical standards promulgated in the 1964 Declaration of Helsinki and was approved by the Ethics Committee of the University Medical Centre Maribor (Slovenia) in 2014.

Conflicts of interest: The authors declare that they have no competing interests.

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