

# Influence of Patients' "Sense of Coherence" on Main Postoperative Variables in the Postanesthesia Care Unit: A Cross-Sectional Study

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*The objective of this study was to investigate whether patients' sense of coherence (SOC)—ability to comprehend their whole situation and their capacity to use available resources—influences acute postoperative complications in the postanesthesia care unit (PACU). We hypothesized that patients' SOC would be negatively related to their experience of pain and nausea, consumption of opioids, and length of stay in the PACU—the higher the SOC, the lower the experience of pain and nausea, less consumption of opioids, and shorter PACU stay. Data were collected from the anesthesia and electronic medical records, and combined with a questionnaire. A total of 115 adults undergoing general anesthesia for orthopedic surgery were*

*included in the analysis. Results showed a statistically significant negative relationship between SOC and postoperative pain and consumption of opioids in the PACU. Patients with a stronger SOC experienced significantly less pain ( $P < .01$ ) and consumed significantly less opioids ( $P < .01$ ) than those with a lower SOC. Patients' SOC influences their experience of pain and opioid consumption in the PACU. Therefore, patients' SOC could be one of many factors that nurse anesthetists consider in their efforts to predict, prevent, and decrease patients' experience of pain in the PACU.*

**Keywords:** Postanesthesia care unit, postoperative pain, sense of coherence.

**R**educing acute postoperative complications following surgery and anesthesia is an important aspect of the practice of nurse anesthesia. From preanesthesia planning through anesthesia delivery and until the patient is released from postoperative care—these are all in the realm of the nurse anesthetist's care.<sup>1</sup> The most common acute postoperative complications are pain and nausea, and multiple factors influence the prevalence of these complications. Certain surgical procedures and anesthetic techniques can provoke increased postoperative pain and nausea. Patients undergoing procedures such as strabismus repair or gynecologic, thyroid, or parathyroid surgery have a higher incidence of postoperative nausea. Anesthetic factors such as general endotracheal anesthesia, long anesthesia duration, volatile anesthetics, and administration of opioids during anesthesia can provoke postoperative nausea.<sup>2,3</sup> Furthermore, patient-specific factors may have an influence. Several studies have shown that women experience more postoperative pain and have a greater incidence of nausea than do men.<sup>2,4-7</sup> Nonsmokers and patients with previous episodes of postoperative nausea and motion sickness are more likely to experience nau-

sea.<sup>2</sup> A recently published systematic review<sup>8</sup> suggests patients' preoperative expectations and preoperative anxiety affect postoperative pain. In clinical practice, it is also commonly observed among anesthesia staff that patients' preoperative state of stress and anxiety have an impact on their postoperative experiences. This is supported by results from a study performed by Ali et al<sup>9</sup> showing patients with high preoperative anxiety experienced a significantly higher level of postoperative pain and opioid consumption. Also, a recently published study performed by Radinovic et al<sup>10</sup> showed that depression and lower levels of education were independent predictors of immediate pain following hip-fracture surgery in elderly patients. Overall, the number of unique risk factors and the individual variability among patients influence postoperative pain and nausea, creating a considerable challenge in the postanesthesia care unit (PACU).

Predicting and preventing these complications are complex tasks that nurse anesthetists must continuously strive to solve. New perspectives and approaches toward this complex clinical challenge may prove helpful. The salutogenic theory is such a new approach.

In the late 1970s the Israeli medical sociologist Aron

Antonovsky,<sup>11</sup> who was born in the United States, created the theory of salutogenesis. Fundamental to the theory is the assumption that how people view their lives influences their health. Individuals' ability to comprehend their whole situation and their capacity to use available resources is called sense of coherence (SOC). The SOC is a resource that enables people to manage tension and cope with stressful situations by identifying and using their general resistance resources. This capacity is a combination of people's ability to assess and understand the situation they are in (comprehensibility), to find meaning in the situation (meaningfulness), and to have the capacity to handle the situation and move in a health-promoting direction (manageability).<sup>12</sup> The theory has been used and tested in international health research in many different contexts. Eriksson and Lindström<sup>13-15</sup> reviewed the salutogenic research published from 1992 to 2003, including 458 scientific publications and 13 doctoral theses. Their review revealed that the SOC questionnaire used to establish SOC has been translated into at least 33 languages in 32 countries. Based on the review, the authors concluded that the SOC scale is a reliable, valid, and cross-culturally applicable instrument to measure how people manage stressful situations and stay well.<sup>13</sup> Also, they concluded that SOC seems to have an impact on quality of life,<sup>14</sup> is strongly related to perceived health, and strengthens resilience.<sup>15</sup>

Going through surgery and anesthesia is stressful, and according to the salutogenic theory, patients with a strong SOC are more resilient in a stressful situation than are people with a weak SOC. Results of our recent research showed that patients with a low SOC (< 50 on a scale of 13 to 91) perceived significantly more noise in the operating room in the preanesthesia period than did patients with a higher SOC (above 50), even though these patients were actually exposed to significantly lower noise levels.<sup>16</sup> This finding indicates that patients' SOC is associated with their perception of noise. Existing research demonstrates that SOC is a significant predictor of postoperative pain following laparoscopic cholecystectomy<sup>17</sup> and that a low SOC correlates with prolonged postoperative recovery time among patients undergoing surgical treatment of lumbar spinal stenosis.<sup>18</sup> Furthermore, existing research showed that patients with a strong SOC experienced less pain 1 year after undergoing coronary artery bypass grafting<sup>19</sup> and that SOC predicted a better outcome 1 year after surgery to treat orthopedic injuries.<sup>20</sup> This knowledge inspired us to further explore the salutogenic theory within an anesthetic perspective.

The aim of this study was to investigate whether the SOC of patients undergoing general anesthesia for orthopedic surgery influences the main postoperative variables in the PACU. On the grounds of existing knowledge and the assumptions in the salutogenic

theory, we hypothesized as follows:

1. Patients' SOC is negatively related to their experience of pain in the PACU. The higher the SOC, the lower the experience of pain.
2. Patients' SOC is negatively related to their consumption of opioids in the PACU. The higher the SOC, the less consumption of opioids.
3. Patients' SOC is negatively related to their experience of nausea in the PACU. The higher the SOC, the lower the experience of nausea.
4. Patients' SOC is negatively related to the length of their stay in the PACU. The higher the SOC, the shorter the stay in the PACU.

## Materials and Methods

• **Design.** A cross-sectional study design was used. Data regarding demographic variables were collected from the anesthesia records, and data regarding the postoperative variables were collected from the electronic medical records (EMRs). These data were then combined with the answers from a questionnaire that patients filled out after being discharged from the PACU.

• **Ethical Considerations.** The study was approved by the investigational committee at Odense University Hospital in Odense, Denmark, and by the Danish Data Protection Agency (jour. No. 2012-41-1176). If included patients wanted to withdraw from the study, they had the option not to hand in the questionnaire, which led to exclusion from the analysis. Data were analyzed anonymously.

• **Population.** Data collection was conducted in 2 hospitals in Southern Denmark: 1 large university hospital and 1 regional hospital. Eligible patients from a previous study were included. The sample size in the previous study was based on a power analysis showing that at least 120 patients were needed. Taking expected dropouts into account, we included 141 patients. All 141 available patients from the previous study were included in this study. A power analysis was not performed on the present parameters. The population consisted of adults (aged  $\geq 18$  years) undergoing general anesthesia for orthopedic surgery: 70 patients undergoing acute care surgery and 71 patients undergoing elective (planned) surgery. Patients who because of cognitive or linguistic impairment were considered not to be able to read, comprehend, or fill out the questionnaire were excluded. All patients received the same type of intravenous anesthesia (propofol and remifentanyl [Ultiva]), and none of the patients received pre- or intraoperative antiemetic therapy.

• **Data Collection.** The explanatory variable SOC was established using a specially designed questionnaire invented by Antonovsky.<sup>12</sup> The questionnaire comes in 2 versions: a 13-item version and a 26-item version. We used the 13-item Danish version of the SOC questionnaire translated and retranslated by Due and Holstein.<sup>21</sup> The questionnaire measures the degree to which the

respondents view the world around them as comprehensible (5 items), manageable (4 items), and meaningful (4 items).<sup>12</sup> Responses to all items were scored on a 7-point Likert scale. The total SOC score was calculated by adding the score for all 13 questions, with the range being between 13 and 91. A score at the high end of the scale indicates a strong SOC, and a score at the low end of the scale indicates a weak SOC. Subsequently, the 2 following questions regarding how patients experienced their overall health and level of stress in their daily lives followed: (1) How would you say your health is overall? (2) Do you feel stress in your daily life? The 2 variables accentuated in these questions (health and stress) are considered possible confounders. On both accounts, patients rated themselves on a scale from 1 to 7, with 1 being experience of bad health/high level of stress and 7 being experience of excellent health/no stress. Patients were asked to complete the questionnaire immediately after being discharged from the PACU.

The following demographic variables, representing the minimum information that anesthesia staff collect on a patient before anesthesia, were recorded from the anesthesia record: sex, age, type of surgery (acute care/elective), and size of surgery (minor/major). These demographic variables are all considered potential confounders. In assessment of the surgery being categorized as minor or major, both operation size and severity were taken into account. The surgery was categorized into 2 groups. Minor surgery included biopsy procedures, arthroscopies, minor bone fractures, and removal of osteosynthetics. Major surgery included traumas, amputations, cancer surgery, and multiple or major bone fractures.

The postoperative variables, representing the outcome variables, were registered from the EMR. Postoperative pain and nausea were measured in the PACU using a visual analog scale (VAS), which measures the patient's perception of the symptoms' severity. Patients were asked to rate their level of pain and nausea on a scale from 1 to 10, with 1 representing no pain or nausea and 10 indicating the worst thinkable pain or nausea. Pain and nausea were rated separately. This procedure was performed when patients arrived in the PACU, regularly during their stay in the PACU if the patients reported feeling pain or nausea, and just before patients were released from the PACU. We used the highest VAS scores for each patient as the outcome parameters for postoperative pain and postoperative nausea.

All opioids administered in the PACU were recorded for each patient. The opioids were converted to equipotent doses corresponding to 10 mg of morphine administered intravenously, as shown in Table 1. Morphine is the gold standard to which all other opioids are compared in terms of potency, and conversion to equipotent doses corresponding to 10 mg of morphine is the internationally accepted way of equating opioids.<sup>22</sup> We

are, of course, aware that different opioids have different effects. The equipotent doses were converted to a sum of intravenous morphine, which was then divided by the patient's weight in kilograms, resulting in the outcome parameter "intravenous opioids mg/kg". The outcome variable "length of stay in the PACU" was registered in minutes from the time patients entered the PACU until they were released.

• **Statistical Analysis.** Descriptive statistics were applied to obtain the means and standard deviation (SDs). To compare results with those of previous studies, we applied means and SDs, even though data were not evenly distributed, because this is how previous studies presented results.<sup>13</sup> Antonovsky<sup>12</sup> recommended SOC to be analyzed without dividing the sum of the item values into low or high SOC. Consequently, there is no "gold standard" for cut points in the SOC range to establish SOC as high, moderate, or low. A number of studies report their results as divisions into subgroups in different ways, and no general pattern of division emerges.<sup>13</sup> To preserve the diversity in the scale and to be true to Antonovsky's recommendations, we analyzed and reported SOC as a continuous variable. The SOC score can conveniently be treated as a continuous variable, although it is formally a pseudocontinuous variable because it assumes only integer values in the interval between 13 and 91.

The internal consistency was tested using the Cronbach  $\alpha$  reliability coefficient. Coefficients greater than 0.7 were considered good, and coefficients greater than 0.9 were considered excellent. Multiple regressions were performed to determine the relationship between SOC and confounders and the outcome variables. The level of significance was set at  $P < .05$ . The statistical analysis was performed using the Stata/IC 12.1 statistics computer program (StataCorp LP) for PC Windows 2010 (Microsoft Corp).

## Results

• **Description of Sample.** A total of 141 patients were eligible for the study. Of these, 26 patients (16 elective and 10 acute care) were excluded from the analysis for the following reasons: 5 patients did not manage to complete the questionnaire because of postoperative stress, pain, or nausea; 4 patients were hindered from completing the questionnaire by linguistic or cognitive difficulties; 4 patients failed to answer all the questions in the questionnaire; 8 questionnaires were unaccounted for; and 5 anesthesia records were incomplete. Consequently, 115 patients (60 men and 55 women) were included in the analysis. Their mean age was 50.3 years (SD = 15.5 years). Patients undergoing minor surgery were overrepresented (79% minor surgery vs 21% major surgery).

• **Distribution of Sense of Coherence.** Baseline data combined with the distribution of SOC are presented in

Opioid	Equipotent dose, mg
<b>Intravenous route</b>	
Pethidine/meperidine	75
Ketobemidone (Ketogan)	5
Alfentanil	0.6
Fentanyl	0.15
<b>Oral route</b>	
Morphine	30
Ketobemidone (Ketogan)	15
Oxycodone (OxyNorm)	15

**Table 1.** Conversion of Opioids to Equipotent Doses Corresponding to 10 mg of Intravenous Morphine

Table 2. As shown, the total mean score on the SOC was 68 (SD = 15), and scores ranged from 20 to 91 (possible range = 13-91). The distribution was slightly skewed (-0.8). Men's SOC was found to be higher than women's, and older patients (age > 60 years) scored higher on SOC than younger ones. Patients having minor surgery scored higher on SOC than patients undergoing major surgery. Cronbach  $\alpha$  coefficient for the SOC scale was 0.92.

• *Sense of Coherence and Postoperative Variables.* Table 3 presents the effects of the independent variables (the explanatory variable SOC and confounders) on the postoperative outcome variables. The results showed a negative relation between SOC and postoperative pain, which was statistically significant at the 5% level ( $P < .01$ ). As indicated by the regression coefficient for SOC in the VAS pain column in Table 3, an increase in SOC of 1 point was associated with a decrease in the VAS pain score of 0.09 point. Therefore, the difference in the VAS pain score between a patient with an SOC of 20 (weak SOC) and a patient with an SOC of 90 (strong SOC) is 6.3 points. The relation between SOC and postoperative pain is illustrated in Figure 1. Undergoing major surgery was a statistically significant confounder related to postoperative pain ( $P < .01$ ). Patients undergoing major surgery had a 2-point higher VAS pain score than did patients having minor surgery. The coefficient of determination ( $R^2$ ) indicated that 47% of the variation in VAS pain scores was systematically related to variation in SOC and confounders.

The results showed a negative relation between SOC and consumption of opioids in the PACU, which was statistically significant at the 5% level ( $P < .01$ ). As indicated by the regression coefficient for SOC in the opioids column in Table 3, an increase in SOC of 1 point was associated with a decrease in consumption of opioids of 0.01 mg/kg, corresponding to 1 mg for a patient weighing 100 kg. Thus, the difference in consumption of opioids during the time spent in the PACU between a 100-kg patient with an SOC of 20 (weak SOC) and a 100-kg patient with an SOC of 90 (strong SOC) was 70 mg of opioids. The relation between SOC and consumption

Variable	No. (%) of total sample (N = 115)	Mean SOC score (SD)
<b>Gender</b>		
Male	60 (52)	69 (15)
Female	55 (48)	66 (17)
<b>Surgery</b>		
Elective	55 (48)	67 (13)
Acute care	60 (52)	68 (16)
Minor	91 (79)	68 (14)
Major	24 (21)	65 (16)
<b>Age, y<sup>a</sup></b>		
18-39	29 (25)	67 (11)
40-59	48 (42)	65 (15)
≥ 60	38 (33)	71 (16)

**Table 2.** Baseline Data and Distribution of Sense of Coherence (SOC)

<sup>a</sup>Mean age (SD) = 51 (15) years.

of opioids is illustrated in Figure 2. Undergoing major surgery was a statistically significant confounder related to consumption of opioids. Patients undergoing major surgery had 0.26 mg/kg more opioids than did patients having minor surgery. Furthermore, women consumed more opioids (0.1 mg/kg) than did men.  $R^2$  indicated that 54% of the variation in consumption of opioids in the PACU was systematically related to variation in SOC and confounders.

No relationship was found between SOC and the outcome variables nausea and length of stay in the PACU. However, length of stay in the PACU was found to be significantly related to the type and size of the surgery. Undergoing acute care and/or major surgery was statistically significantly related to a longer stay in the PACU ( $P < .01$ ), as these patients spent around 1 hour longer in the PACU than did patients having elective and/or minor surgery. Furthermore, SOC was statistically significantly related to patients' experienced overall health and level of stress in their daily lives ( $P < .01$ ). No relation was found between age and the outcome variables.

## Discussion

The results of this study showed that patients' experience of postoperative pain and consumption of opioids in the PACU are significantly related to their SOC. Patients with a stronger SOC experienced less pain and consumed less opioids than did patients with a weaker SOC. There was no relation found between SOC and the outcome variables nausea and length of stay in the PACU.

• *Distribution of Sense of Coherence.* The distribution of SOC found in this study matches those of previous studies. The review study by Eriksson and Lindström<sup>13-15</sup> established that the range of means for the SOC 13 questionnaire was 35 to 78 (SD = 0-14). The mean SOC in

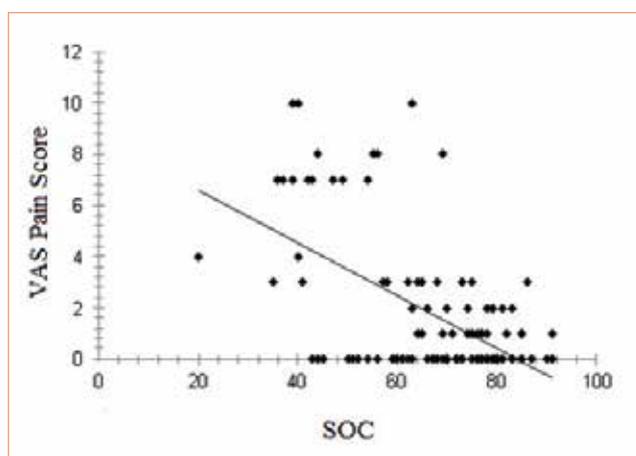
Variable	VAS pain	VAS nausea	Opioids	Stay in PACU
<b>Sense of coherence</b>	-0.09 <sup>a</sup>	-0.01	-0.01 <sup>a</sup>	0.03
<b>Confounder</b>				
Female gender	0.18	0.06	0.10 <sup>b</sup>	-12.43
Age	0.01	-0.01	0.01	0.57
Acute care surgery	0.18	0.19	-0.01	57.14 <sup>a</sup>
Major surgery	2.03 <sup>a</sup>	-0.04	0.26 <sup>a</sup>	64.27 <sup>a</sup>
Health	-0.20	-0.02	0.01	-6.27
Stress	0.03	-0.06	-0.03	-14.40
<i>R</i> <sup>2</sup>	0.47	0.05	0.54	0.44

**Table 3.** Multiple Regressions: Effects of Sense of Coherence and Confounders on Postoperative Outcome Variables

Abbreviations: PACU, postanesthesia care unit; VAS, visual analog scale.

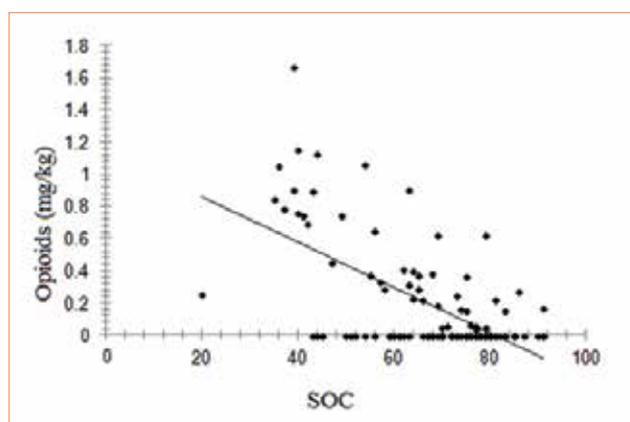
<sup>a</sup>*P* < 0.01.

<sup>b</sup>*P* < 0.05.



**Figure 1.** Relation Between Patients' Sense of Coherence (SOC) and Their Visual Analog Scale (VAS) Pain Score in Postanesthesia Care Unit

this study, found to be 68 (SD = 15), is in this range but with a slightly higher variation. Furthermore, the result of this study showed that men had a higher SOC than women, and older patients, a higher SOC than younger ones. These findings also match those found in previous studies, which show that SOC tends to increase with age and that men generally have a higher SOC than do women.<sup>13,23-25</sup> The Cronbach  $\alpha$  coefficient in this study was 0.92, which matches those of previous studies<sup>13</sup> and indicates a high internal consistency. To our knowledge, there are no previous studies measuring the distribution of SOC in patients undergoing minor or major surgery. The fact that patients undergoing major surgery had a lower SOC score than patients having minor surgery could be explained by the different contexts of the situation in the 2 groups. The context of undergoing major surgery, including anxiety or even fear regarding size and severity of the operation, postoperative pain, and possible outcome of the operation, could potentially have a negative influence on patients' SOC and temporarily decrease



**Figure 2.** Relation Between Patients' Sense of Coherence (SOC) and Their Consumption of Opioids in Postanesthesia Care Unit

their general resistance resources.

The validation analyses revealed slight problems with floor and ceiling effects. While some tendencies to flooring are present, the ceiling effect appears much stronger. However, the analyses indicate that no respondents systematically went for the floor (sum = 13) and only 3 respondents (2.6%) went for the ceiling (sum = 91). Anyway, the tendencies to ceiling may potentially have had some effects on the analyses. Some actual variation in the SOC distribution might not be reflected because we were not able to distinguish between respondents scoring 91 and those who would have scored higher if possible. This limited variability in the SOC distribution may have reduced the power of statistics on the relationship between SOC and the outcome variables. Also, our data may gravitate toward ceiling effect secondary to self-selected disqualification from the study by 5 participants who on the grounds of postoperative stress, pain, or nausea were unable to complete the questionnaire—possibly because of a low SOC.

• **Hypotheses.** We hypothesized that patients' SOC

would, first, be negatively related to their experience of pain and, second, be negatively related to their consumption of opioids in the PACU. The results of this study showed a statistically significant negative relationship at the 5% level between both SOC and pain and SOC and consumption of opioids. Our hypotheses are confirmed, and the results support the salutogenic theory and match those of previous studies. Not surprisingly, undergoing major surgery was a significant confounder. Inevitably, the size of the surgery influences the expected level of postoperative pain and consumption of opioids in the PACU.

Third, we hypothesized that patients' SOC would be negatively related to their experience of nausea in the PACU. However, the results of this study showed no relationship between SOC and nausea. Consequently, this hypothesis was not confirmed. The prevalence of nausea in the PACU found in this study was very low. This indicates either that nausea is rare and not very clinically important or that the anesthesia staff was preemptively very astute in treatment, removing this as a variable in our study.

Fourth, we hypothesized that patients' SOC would be negatively related to the length of stay in the PACU. The results of this study showed no relationship between SOC and length of stay in the PACU. Thus, this hypothesis was not confirmed. This is a bit surprising when we take into account the significant relationship between SOC and consumption of opioids. Generally, consumption of opioids in the PACU is associated with a prolonged stay in the PACU. Subsequently, it would be expected that patients with a weak SOC and a high VAS pain score followed by a high consumption of opioids would also have a longer stay in the PACU. This may not have reached statistical significance in our study because of the overwhelming representation of patients undergoing minor surgery vs major surgery, for which a prolonged stay in the PACU may have been more characteristic. However, many other variables have an impact on the length of stay in the PACU. Certain kinds of operations require a predefined length of stay in the PACU. Also, some physiological parameters such as oxygen saturation and blood pressure have predefined requirements to be met before patients are released from the PACU. Furthermore, practical aspects can influence patients' release from the PACU, such as availability of transportation, staff being ready to receive the patient, and availability of inpatient beds.

• **Implications and Future Research.** The study results indicate that patients' SOC is related to perception of pain and consumption of opioids in the PACU. This result is of great clinical importance. If nurse anesthetists can use SOC to predict which patients will experience pain, they have the opportunity to act on it and give these patients extra attention to prevent and decrease this complication. Furthermore, increased opioid doses can result in a longer stay in the PACU, drug interactions, and altered mental status of patients. Because the PACU is often a

critical delay point for the surgical unit, reducing the time that patients spend in the PACU is of great importance. The question is whether SOC can be used as a predictor for pain in the PACU. Results of this study indicate that it can, and this is supported by a previous study indicating that SOC can be used as a predictor for postoperative pain.<sup>17</sup> The question is where to put the cut points in the SOC scale and when a certain SOC would imply an intervention. What does an individual level of SOC at a given time mean in practice? This must be further investigated before SOC is applicable as a predictor that can complement the existing knowledge that nurse anesthetists already have in this aspect of nurse anesthesia.

Another implication of the study could be to focus on strengthening SOC of patients with a low SOC in the preoperative setting. Existing research shows it is possible to strengthen patients' SOC through talk-therapy groups based on salutogenic treatment principles.<sup>26</sup> Because this is a long-term intervention, it is not applicable in nurse anesthesia, however. Instead, research should explore how nurse anesthetists can help and support patients with a weak SOC in the short-term tactical environment.

• **Limitations.** This study included 115 patients in the analysis, which might be considered a small population. However, the results support the assumption in the salutogenic theory and results from previous studies, which increases the reliability. Variables other than those investigated in this study can influence patients' experience of pain and consumption of opioids in the PACU. Characteristics of the surgical and anesthetic procedures and patients' characteristics other than those captured in this study can influence the outcome variables. This might have confounded the results.

Differences in SOC between those who did manage to fill out the questionnaire and those who did not are likely. According to the salutogenic theory—and the results of this study—we may assume that patients with a weak SOC will have a greater tendency to experience stress, pain, and nausea, resulting in not being able to complete the questionnaire and causing exclusion from the analysis, therefore trending toward ceiling of the data. Likewise, we may assume that patients with linguistic or cognitive difficulties resulting in not being able to complete the questionnaire might have a weaker SOC than patients without these difficulties. Consequently, the exclusion of these patients from the analyses might have biased the results and led toward ceiling of the data. The very personal and abstract character of the questions in the SOC questionnaire might also influence respondents not being able to or willing to respond truthfully. This might have resulted in possible response bias. However, previous studies show that respondents do not usually find the SOC questionnaire difficult to complete, resulting in the conclusion that the face validity of the SOC scale is acceptable.<sup>13</sup>

Research is needed to establish cut points in the SOC scale and to test possible interventions to optimize the care of patients with a weak SOC. Knowledge of this is necessary if nurse anesthetists are to implement SOC as a variable in their clinical work.

## Conclusion

Patients' postoperative VAS pain score and consumption of opioids in the PACU were significantly negatively related to their SOC ( $P < .01$ ). An increase in SOC of 1 point led to a decrease in the VAS pain score of 0.09 point and a decrease in consumption of opioids of 0.01 mg/kg. These findings indicate that patients' SOC influences their experience of pain and consumption of opioids in the PACU. Several variables other than SOC can influence these variables. Patients' SOC should therefore be one of many considerations that nurse anesthetists take into account in their efforts to predict, prevent, and decrease patients' experience of pain in the PACU. Further research is needed that focuses on establishing cut points in the SOC scale and testing possible interventions to optimize the care of patients with a weak SOC.

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## DISCLOSURES

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