

# Factors related to Preoperative Anxiety among Patients undergoing Abdominal Surgery in Phu Tho Province General Hospital, Vietnam

นิพนธ์ต้นฉบับ

Original Article

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## บทคัดย่อ

**วัตถุประสงค์:** เพื่อศึกษาภาวะวิตกกังวลก่อนการผ่าตัดและทดสอบความสัมพันธ์กับปัจจัยที่เกี่ยวข้องประกอบด้วย อายุ การสนับสนุนทางสังคม การรับรู้ความรุนแรงของการเจ็บป่วยและการรับรู้ความเสี่ยงของการผ่าตัด **วิธีการศึกษา:** กลุ่มตัวอย่างคือผู้ป่วยที่ถูกรับเข้ารักษาในโรงพยาบาลฟู โท ประเทศสาธารณรัฐเวียดนามและจะเข้ารับการผ่าตัดทางหน้าท้องจำนวน 90 คน กลุ่มตัวอย่างได้มาโดยการสุ่มอย่างง่ายเพื่อเก็บข้อมูลเกี่ยวกับ ข้อมูลทั่วไป ภาวะวิตกกังวลก่อนผ่าตัด การรับรู้ความรุนแรงของโรค การรับรู้ความเสี่ยงของการผ่าตัดและการสนับสนุนทางสังคม นำเสนอข้อมูลโดยสถิติเชิงบรรยายและค่าสหสัมพันธ์เพียร์สัน **ผลการศึกษา:** กลุ่มตัวอย่างมีอายุเฉลี่ย 46.76 ปี มีอายุตั้งแต่ 18 ปีถึง 73 ปี เป็นเพศชายมากกว่าหญิงเล็กน้อย (ร้อยละ 53.3) ส่วนใหญ่จบการศึกษาระดับมัธยมศึกษาตอนปลาย (ร้อยละ 57.8) มีสถานภาพสมรสร้อยละ 85.6 และมีอาชีพเกษตรกร ร้อยละ 51.1 ทั้งนี้ร้อยละ 54.4 ของกลุ่มตัวอย่างมีรายได้ต่อเดือนต่ำกว่า 2,000,000 เวียดนามดอง ผู้ป่วยทั้งหมด (100%) มีผู้ดูแลระหว่างเข้าโรงพยาบาลเพื่อผ่าตัด ภาวะวิตกกังวลของกลุ่มตัวอย่างอยู่ในระดับปานกลาง ( $M = 8.22, SD = 3.82$ ) ภาวะวิตกกังวลสัมพันธ์อย่างมีนัยสำคัญทางสถิติกับโดยสัมพันธ์ทางบวก การรับรู้ความรุนแรงของการเจ็บป่วย ( $r = 0.281, P < 0.01$ ) และทางลบกับการสนับสนุนทางสังคมในมิติด้านการสนับสนุนบุคลากรทางสุขภาพ ( $r = -0.252, P < 0.05$ ) ส่วนอายุ การสนับสนุนทางสังคมจากเพื่อนและสมาชิกในครอบครัวพบความสัมพันธ์แต่ไม่มีนัยสำคัญทางสถิติ **สรุป:** ผู้ป่วยชาวเวียดนามที่เข้ารับการผ่าตัดทางหน้าท้องมีภาวะวิตกกังวลระดับปานกลาง การพัฒนาการบำบัดการพยาบาลเพื่อลดภาวะวิตกกังวลก่อนผ่าตัดจะเป็นประโยชน์ต่อผู้ป่วยกลุ่มนี้

**คำสำคัญ:** ภาวะวิตกกังวลก่อนการผ่าตัด, การผ่าตัดทางหน้าท้อง, ผู้ป่วยเวียดนาม

## Abstract

**Objective:** To examine preoperative anxiety and test its relationships with selected factors including age, perceived severity of the illness, perceived surgery risk, and social support among patients undergoing abdominal surgery. **Method:** Ninety patients undergoing abdominal surgery at a general surgery ward of Phu Tho province general hospital, Vietnam participated in this study. They were randomly selected and asked to complete structured questionnaires on general information, preoperative anxiety, social support, perceived severity of illness, and perceived surgical risk. Descriptive statistics and Pearson correlation coefficient were employed to analyze the data. **Results:** The results revealed that the average age of the sample was 46.76 years. Their ages ranged from 18 to 73 years. There were slightly more males (53.3%) than females. Most finished high school (57.8%), and were married (85.6%) and farmer (51.1%). More than half of the sample (54.4%) earned less than 2,000,000 Vietnamese Dong per month. All patients (100%) were taken care of by family caregivers during the hospital stay. Preoperative anxiety was in moderate level ( $M = 8.22, SD = 3.82$ ). It was significantly positively correlated with perceived severity of the illness ( $r = 0.281, P < .01$ ) and significantly negatively correlated with support from health professional ( $r = -0.252, P < 0.05$ ). However, preoperative anxiety was not significantly correlated with age, perceived surgery risk, or support from family/ friends. **Conclusion:** Vietnamese patients undergoing abdominal surgery had moderate anxiety. Development of nursing intervention aimed at reducing preoperative anxiety could benefits this group of patients.

**Keywords:** preoperative anxiety, abdominal surgery, patients, Vietnam

## Introduction

Abdominal surgery is defined as surgery pertaining to the contents of the abdominal cavity. It may involve not only the intra-abdominal organs such as liver, pancreas, or gastrointestinal tract, but also the extra-abdominal structures like the prostate gland or urinary track, etc.<sup>1</sup> In addition, abdominal surgery also is the most common operative procedure in hospitals worldwide.<sup>2</sup> It accounted for 28% of surgical patients in the United Kingdom,<sup>3</sup> 20, 23% in Ireland,<sup>4</sup> and 19% in Taiwan.<sup>5</sup> Similar to other countries, in Vietnam,

abdominal surgery accounted for 30% of all surgical patients in Ho Chi Minh City,<sup>6</sup> or 36.9% of all surgical patients of Dong Thap Province Hospital from 2003 to 2007.<sup>7</sup>

A person undergoing abdominal surgery may have biological, social, and psychological impacts.<sup>1,7</sup> Besides, patients may feel anxious and nervous about the upcoming surgical treatment which may occur during preoperative, intraoperative, or postoperative phase.<sup>8,9</sup> Therefore, preoperative anxiety is a major concern for patients

undergoing surgery. It tends to be common in abdominal surgery.<sup>9,10</sup> Reports indicated that a significant number of adult patients undergoing surgical procedures experienced high levels of anxiety before surgery.<sup>11,12</sup> The incidence of preoperative anxiety accounts for 92% of patients in surgical wards,<sup>13</sup> around 60% to 80% of all surgical patients in the Western population,<sup>14</sup> and about 49.3% of those surgical patients with high preoperative anxiety in Turkey.<sup>11</sup> However, little research in Vietnam was conducted to investigate the anxiety issue, especially preoperative anxiety among patients undergoing abdominal surgery. A survey in Ha Noi Hospital indicated that 97.3% patients who had abdominal surgery reported preoperative anxiety.<sup>15</sup>

Notably, preoperative anxiety affects patients holistically on physical, psychological, and sociological aspects. It can significantly affect the immune system because of the actions suppressing cortisol and catecholamines. These biological substances cause a pro-inflammatory response in the body, leading to a decrease in cellular immunity that subsequently prolongs healing time.<sup>16</sup> Preoperative anxiety is harmful because it may lead to high risks of morbidity and mortality in patients.<sup>17</sup> It also plays a role increasing the risks of infection, impaired immune system response,<sup>18</sup> complications, and other risks related to surgery such as pulmonary risks, nausea or vomiting,<sup>19</sup> analgesic and anesthetic requirements, and postoperative pain.<sup>20,21</sup> It also prolongs postoperative recovery, and length of hospital stay<sup>22</sup> as well as leads to high threat of death.<sup>21</sup> These negative effects may increase treatment costs and might become economic burdens of patients and their families.<sup>23,24</sup>

There are many studies conducted in the West and in some Asian countries, affirming the existence of preoperative anxiety among patients undergoing abdominal surgery. However, most of these investigations have been conducted outside Vietnam. There is still a big gap of understanding regarding preoperative anxiety and its associated factors for Vietnamese patients of abdominal surgery. In addition, lack of knowledge and better understanding regarding these issues is one of the barriers impeding health care providers, nurses in particular, from providing effective care to patients with abdominal surgery. Therefore, the study focusing on exploring preoperative anxiety and its associated factors among Vietnamese preoperative patients should be a priority. This study brought about baseline data and enabled nurses to better address the needs, and reduce preoperative anxiety or

negative consequence of caring for persons with abdominal surgery. These would in-turn help promote quality of care for patients.

The purposes of this study were to describe preoperative anxiety and test its relationships with age, perceived severity of the illness, perceived surgery risk, and social support among patients undergoing abdominal surgery in Phu Tho province general hospital, Vietnam.

## Method

A descriptive correlation design was employed in this study. This study was conducted at a surgical ward of Phu Tho Province General Hospital. The hospital has continued to develop and become the largest hospital in the Northwest of Vietnam. This hospital has 1,300 beds with 34 wards taking responsibility to look after one million three hundred people's health in Phu Tho province, as well as other areas surround Phu Tho province. This study was conducted from September, 2013 to October, 2013.

The sample was 90 adult surgery patients who were in the preoperative phase undergoing major elective abdominal surgery from Phu Tho Province General Hospital, Vietnam. They were selected using simple random sampling technique. This sample size was calculated by using Thorndike's formula.<sup>25</sup> The inclusion criteria for these participants consisted of 1) being 18 years old or older, 2) undergoing open major elective abdominal surgery with general anesthesia, 3) no previous experience of surgery, 4) being able to read and write or communicate well in Vietnamese, 5) being willing to participate in this study.

### Instruments

Data were collected by using four questionnaires including the Patient's Demographic information sheet, the Hospital Anxiety and Depression Scale-Anxiety (HADS-A), the Brief Illness Perception Questionnaire (BIPQ), the Perceived Surgery Risk Questionnaire, and the Multi-Dimensional Support Scale (MDSS). Demographic information to be collected included patients' age, gender, date of admission, occupation, educational level, marital status, income, diagnosis, abdominal surgery organs, and co-morbid disease.

The **Hospital Anxiety and Depression Scale (HADS)** in part of measuring anxiety (HADS- A) was used to measure

preoperative anxiety. HADS-A was developed by Zigmond and Snaith (1983).<sup>26</sup> The anxiety score was the total score for all seven items, ranged from 0 to 21. Based on that, the anxiety score was interpreted as followings 0 (no anxiety), 1 – 7 (mild anxiety), 8 – 14 (moderate anxiety), and 15 – 21 (severe anxiety). The HADS-A had been translated into Vietnamese and used to assess preoperative anxiety among patients undergoing abdominal surgery. The Content Validity Index (CVI) of the HADS-A was 1. Cronbach's alphas presented in previous studies ranged from 0.80 to 0.93.<sup>15,27</sup> In this study, the reliability of this questionnaire, tested in the pilot study with 30 sample, good (Cronbach's alpha of 0.81).

The **Brief Illness Perception Questionnaire (BIPQ)** was used to measure perceived severity of the illness among patients undergoing abdominal surgery. The BIPQ was developed by Broadbent et al (2006).<sup>28</sup> This instrument had nine items. Five items assess cognitive illness representations: consequences (Item 1), timeline (Item 2), personal control (Item 3), treatment control (Item 4), and identity (Item 5). Two of the items assess emotional representations: concern (Item 6) and emotions (Item 8). One item assesses illness comprehensibility (Item 7). All of the items except the causal question are rated using from 0 to 10 response scale. Assessment of the causal representation is by an open-ended response item adapted from the IPQ-R, which asks patients to list the three most important causal factors in their illness (Item 9). The higher score is the higher contributive perceived severity of the illness. In contrast, the lower score is the lower contributive perceived severity of the illness. In addition, Broadbent et al (2006)<sup>28</sup> demonstrated a good concurrent validity with relevant measures, predictive validity and discriminate validity. There is a good evidence for the psychometric properties of the English version BIPQ. It showed good test-retest reliability with coefficients in a range of 0.48 - 0.70. This study found good reliability with a test-retest for 30 participants as indicated by a correlation of 0.81 at a significance level of 0.01 level (2-tailed).

**Perceived Surgery Risk** questionnaire was developed to assess perceived surgery risk that contributes to preoperative anxiety among patients undergoing abdominal surgery. The perceived surgery risk questionnaire includes 8 items with five point-rating scales, i.e., 5-strongly agree, 4-agree, 3-unsure, 2-disagree, and 1-strongly disagree. The total scores range from 8 to 40; where higher score indicates

higher contributive perceived surgery risk. For this study, three experts evaluated the content validity of the new instrument which was the Perceived Surgery Risk Questionnaire with CVI at 1.00. The reliability coefficient of the scale tested with 30 participants was 0.73.

**The Multi-Dimensional Support Scale (MDSS)** was used to assess social support in this study. It was developed by Winefield et al (1992).<sup>29</sup> This instrument had 11 items including 6 items of family/friends support and 5 items of support from health professionals, with a 4-point rating scale ranging from 0 = never, to 1 = sometimes, 2 = often, and 3 = always. Therefore, the sum score of family/ friends support ranged from 0 to 15 and the sum score of health professional support ranged from 0 to 18. A higher score represented a better social support as perceived by patients. In addition, the MDSS was translated into Vietnamese and used to assess preoperative anxiety in Long study (2010).<sup>15</sup> The Content Validity Index of the MDSS was 0.81. The Cronbach's alpha of MDSS for the overall scale (11 items) was at 0.74; 0.79 for health professional support subscale, and 0.80 for family/friends support subscale. For this study, the reliability coefficient of the scale tested with 30 participants for overall scale (11 items) was at 0.9, while those for health professional support subscale and family/ friends support subscale were 0.81 and 0.85, respectively.

#### Data Collection

The study protocol was granted for ethical approval from the Faculty of Nursing Burapha University-Institutional Review Board (IRB No. 01-09-2556, Sep. 5, 2013). After granting allowance from authorities of Phu Tho Province General Hospital, data collection began. Patients who met the study criteria and agreed to participate in the study signed a consent form. With their written consent, each participant was asked to complete the questionnaire in their room at the surgical ward. It took about 30 minutes to complete the questionnaires.

#### Data analyses

The alpha level for significance was set at 0.05. Descriptive statistics were used to describe the sample characteristics and enumerate the preoperative anxiety and its related factors. The Pearson correlation coefficient was used to explore the relationships between preoperative anxiety and age, perceived severity of the illness, perceived surgery risk, and social support.

## Results

A total of 90 patients who underwent major elective abdominal surgery and met the inclusion criteria were recruited from surgical ward in Phu Tho Province General Hospital, Vietnam. The average age of the sample was 46.76 years ( $SD = 14.93$ ) (Table 1). There were more males (53.3%) than females. About 57.8% of the sample completed high school. Most subjects were married (85.6%) and were farmer (51.1%). About half of the sample (54.4%) earned an income of < 2,000,000 Vietnamese Dong per month. All subjects (100%) were taken care of by family members, whereas more than half of the sample (54.4%) were taken care of by one family member during their hospital stay.

**Table 1** Frequency and percentage of demographic characteristics of the sample (N = 90).

Demographic characteristics	N	%
<b>Gender</b>		
Male	48	53.3
Female	42	46.7
<b>Age (years)</b>		
≤ 30	16	17.8
31 – 40	16	17.8
41 – 50	15	16.7
51 - 60	22	24.4
≥ 61	21	23.3
Mean = 46.76, SD = 14.93, range = 18-73 years		
<b>Marital status</b>		
Married	77	85.6
Single	11	12.2
Widowed/ Divorced/ Separated	2	2.2
<b>Educational level</b>		
No formal education	4	4.4
Elementary school	7	7.8
Secondary school	12	13.3
High school	52	57.8
Diploma degree	9	10.0
Bachelor degree	5	5.6
Master degree or higher	1	1.1
<b>Occupation</b>		
Farmer	46	51.1
Industrial worker	14	25.6
Retired	12	13.3
Government officer	6	6.6
Business person	3	3.3
Unemployment/ Housewife	9	10.0
<b>Income/ Month (VND)</b>		
< 2,000,000	49	54.4
2,000,000 - < 3,000,000	23	25.6
3,000,000 - < 4,000,000	13	24.4
≥ 4,000,000	5	5.6
<b>Family caregiver during hospitalization</b>		
1 person	49	54.4
2 persons	30	33.3
≥ 3 persons	11	12.3

It was found that the abdominal surgery organs among the study is related to intestinal tract (28.9%) followed by the surgeries related to liver, gallbladder/ bile-duct (21.1%), kidney/ urology (20.0%), and stomach/ duodenum (13.3%) (Table 2). Only 17.8% of sample had co-morbidities (n=16). The most common co-morbid disease found in this sample was hypertension (6.7%).

**Table 2** Frequency and percentage of abdominal surgery and illness characteristics of the sample (N = 90).

Abdominal surgery and illness characteristics	N	%
<b>Abdominal surgery organs</b>		
Intestinal tract	26	28.9
Liver/ Gallbladder/ Bile ducts	19	21.1
Kidney/ Urology	18	20.0
Stomach/ Duodenum	12	13.3
Pancreas	10	11.1
Spleen	5	5.6
<b>Co-morbid disease</b>		
None	74	82.2
Hypertension	6	6.7
COPD	4	4.5
Diabetes	3	3.3
Gout	2	2.2
Heart failure	1	1.1

### Preoperative anxiety

The mean score of preoperative anxiety in this study was 8.22 ( $SD = 3.82$ ), with a possible range of 0 - 21. There were 98.9% of sample who had preoperative anxiety and this sample had a moderate level of preoperative anxiety. Especially, there was 50% of the sample reporting moderate level of preoperative anxiety; while 43.3% had a mild and 5.6% a severe level of preoperative anxiety. Notably, only one sample (1.1%) reported no anxiety before surgery.

**Table 3** Description of preoperative anxiety (N = 90).

Item	Mean	SD	N	%	Level
<b>Preoperative anxiety</b>	8.22	3.82	89	98.9	Moderate
No anxiety (0)			1	1.1	
Mild anxiety (1-7)			39	43.3	
Moderate anxiety (8-14)			45	50.0	
Severe anxiety (15-21)			5	5.6	

### Correlation between preoperative anxiety and perceived severity of the illness, perceived surgery risk, and social support

The mean scores of perceived severity of the illness, perceived surgery risk, and social support are shown in

Table 4. It was found that preoperative anxiety was significantly correlated with 2 factors: perceived severity of the illness with a positive relationship ( $r = 0.281, P < 0.01$ ) and health professional social support with a negative relationship ( $r = -0.252, P < 0.05$ ) (Table 5). Correlations between preoperative anxiety and other variables including age, perceived surgery risk, and family/ friends support were found with no statistical significance.

**Table 4** Description of perceived severity of the illness, perceived surgery risk, and social support (N = 90).

Variables	Mean	SD
Perceived severity of the illness	51.00	8.51
Perceived surgery risk	25.00	4.73
Total social support	21.10	4.59
Support from family/ friend	12.00	2.66
Support from health professional	10.00	2.53

**Table 5** Correlation coefficient (r) among selected factors with preoperative anxiety (N = 90).

Variables	Correlation coefficient (r) with preoperative anxiety
Age	0.052
Perceived severity of the illness	0.281**
Perceived surgery risk	0.202
Social support (Total)	-0.184
Support from family/ friends	-0.077
Support from health professionals	-0.252*

\*  $P < 0.05$ ; \*\*  $P < 0.01$

## Discussions and Conclusion

The findings of this study are discussed based on research aims: to describe and examine relationships between preoperative anxiety and age, perceived severity of the illness, perceived surgery risk, and social support among patients undergoing abdominal surgery in Phu Tho province general hospital, Vietnam. Most of the sample had preoperative anxiety and only one patient reported no anxiety. Preoperative anxiety was a common problem facing patients undergoing surgery both in this study and previous studies.<sup>1,3,6</sup> Furthermore, these patients had a plan for the major elective abdominal surgery and they had not experienced surgery before. Most of these patients had been hospitalized for several days before major elective abdominal surgery. Therefore, they could not perform activities as usual, and had to spend a lot of the time not working during

preoperative period. These stressors would lead to the prevalence of preoperative anxiety among these patients.

In addition, previous studies showed that, abdominal surgery is a very important negative life event leading to the experience of patient's anxiety.<sup>30</sup> Nevertheless, during preoperative period, support from health professional ( $M = 9.83, SD = 2.53$ ) may be provided with some interventions in helping them to reduce anxiety. Moreover, the entire sample (100%) was adult patients; they had been hospitalized for several days before surgery. Therefore, they can learn and gain some important information related to surgery process from other patients, family, friends, health professional, etc. That would help adjusting and coping with stressor.

Lazarus and Folkman (1984)<sup>31</sup> explained that once people confronted with stressors, they would try to find ways to cope through the process of appraisal. If the patients cannot cope themselves, anxiety will occur. They also referred to factors that influence how to cope and whether or not, patients can succeed in coping. During the period of waiting for operation, patients may face some stressors which include personal factors and situational factors. Deyirmenjian et al (2006) showed that age had a significant effect on preoperative anxiety; while younger patients were more associated with anxiety.<sup>32</sup> This is because young persons have less experience in illnesses and social life, and are more vulnerable to fear when facing troubles or unfamiliar environments of hospitals.<sup>33,34</sup> Another study demonstrated that if patients received clear information from a health professional support, their anxiety was lessened.<sup>35</sup> From those reasons, degree of preoperative anxiety was not severe.

In accordance with the Transactional Stress/Coping Model<sup>31</sup> and literature review, the results of this study showed that the mean score of preoperative anxiety was 8.22 (SD = 3.82) which was considered moderate anxiety level. In terms of frequency, there were 98.9% of the sample had preoperative anxiety with moderate level.

Regarding perceived severity of the illness, the result of this study showed that the mean score of perceived severity of the illness was 51.00 (SD = 8.51). It was significantly positively related to preoperative anxiety among patients undergoing abdominal surgery ( $r = 0.281, P < .01$ ). The higher perceived severity of the illness contributed to higher preoperative anxiety. This finding was consistent with previous studies where higher perceived severity of the

illness was related with higher preoperative anxiety,<sup>36</sup> specifically positive relationships between the perceived severity of the illness with trait anxiety ( $r = 0.26, P < 0.01$ ) and state anxiety ( $r = 0.25, P < 0.01$ ).<sup>37</sup>

The higher social support is associated with lower preoperative anxiety. For the subscale, the mean score of health professional support was 9.83 (SD = 2.53). It had a significantly negative relationship with preoperative anxiety ( $r = -0.252, P < 0.05$ ). The health professional support is one of the situation influencing factors. The results were consistent with a previous study, where the less help and protection they received, the more preoperative anxiety they had ( $P < 0.01$ );<sup>38</sup> the higher levels of social support, the lower levels of anxiety;<sup>39</sup> the more health professional support, the more ability to cope with the surgery process.<sup>40</sup> It has been known that information provided from health professional support was correlated with less patient's anxiety following surgery. Therefore, those more satisfied with information from health professionals were less anxious than those less satisfied.<sup>41</sup>

There were no correlations between preoperative anxiety and overall social support, family/ friends support, perceived surgery risk, and age. Notably all patients (100%) were taken care of by family members during their hospital stay. Some supporters could provide high level of affect and affirmation supports, but they could not provide higher level of support because of their limited knowledge on surgical risk. Therefore, patients mostly relied on support regarding surgery process from health professional rather than from family/friends. It has been know that social support, either from other patients, family and friends, is negatively related to preoperative anxiety.<sup>42</sup> Therefore social support in association with preoperative anxiety should be further investigated.

Perceived surgery risk, one of the situation influencing factors in this study, was not significantly related with preoperative anxiety among patients undergoing abdominal surgery in Phu Tho province general hospital, Vietnam ( $r = 0.202, P > 0.05$ ). During the period of preoperative waiting, most patients are explained for issues related to surgery process from health professional. Therefore, there might be a trust in the doctors and other professionals which further helps the patients to cope with stressors related to perceived surgery risk. However, Lloyd et al (2001)<sup>43</sup> showed that the nature of the interaction between anxiety, immediacy of effect, and risk perception is probably complex. It may be

that the heightened perception of risk that results from the immediacy of effect leads to higher anxiety, which in turn increases risk perception. They also provided evidence that people who are anxious have a higher level of risk perception for negative life events such as the impact of surgery risk on finance, social, or psychological outcomes.<sup>44</sup>

Unexpectedly, age was not significantly related with preoperative anxiety among abdominal surgery in Phu Tho province general hospital, Vietnam. It was expected that higher age would be associated with experience and further associated with less anxiety. However, in this study, even though 57.8% of the sample completed high school and 100% was adult, their direct experience or information regarding surgery might not be sufficient to help them cope with the stressors. Our finding was consistent with that of Yilmaz et al (2012)<sup>38</sup>, where there was no association between age and preoperative anxiety. However it was in contrast with another study which revealed that age was related to preoperative anxiety ( $P < 0.001$ ).<sup>45</sup> Further researches on this issue in Vietnamese are needed to confirm how age influences individual's anxiety.

In terms of implications, the results of this study indicated 98.9% patients had preoperative anxiety. This anxiety was significantly correlated with health professional support and perceived severity of the illness. Therefore, patients highly depended on support from health professionals. Support from nursing intervention to reduce preoperative anxiety should be provided. In addition, nurses should realize the presence of preoperative anxiety in most patients undergoing abdominal surgery, and a nursing care plan to prevent, manage, as well as reduce preoperative anxiety effectively should be carried out. In nursing education, finding in this study could be integrated into a nursing curriculum focusing on the presence of preoperative anxiety and associated factors among patients undergoing abdominal surgery. Consequently, nursing students would know how to assess and provide proper strategies to prevent, manage, as well as reduce preoperative anxiety. For nursing administration, nurse administrators should provide an in-service training on preoperative anxiety assessment and management to their staff. In addition, nurse administrators should encourage their staff to join the related conferences.

In terms of limitations, since the subjects were recruited only from patients undergoing abdominal surgery in Phu Tho province general hospital, Vietnam, it may not be appropriate

to generalize the findings to a broader Vietnamese population. With such limitation, a larger sample size is recommended for future study. In addition, study on anxiety associated with emergency or trauma cases would broaden understanding on how to develop a holistic care plan to help these patients cope. Finally, a study with predictive design, rather than a correlational design as in this current study, is needed.

## Conclusion

The study found moderate level of preoperative anxiety among patients undergoing abdominal surgery in Phu Tho Province General Hospital, Vietnam. Preoperative anxiety was significantly positively correlated with perceived severity of the illness and significantly negatively correlated with support from health professional.

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Editorial note

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