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Original Article

Study on the effect of humanistic nursing in the OR to reduce patients' stress response and POI

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Abstract: Objective: This study was designed to evaluate the effect of humanistic nursing application in the OR on reducing patients' stress response and POI. Methods: In total, 52 patients from the Surgical OR of the hospital were included as the study subjects and were randomized into Group A (n=36) and Group B (n=36). Patients in Group B were routinely nursed, while patients in Group A were nursed humanisticly. The two groups were observed for changes in HR, BP and POI indicators, measured for biochemical indicators by Auto-Chemiluminescence Immunoassay Analyzer (ACIA), evaluated for anxiety and depression with Self-Rating Anxiety Scale (SAS) and Self-rating Depression Scale (SDS), nursing satisfaction with the Questionnaire on Nursing Satisfaction (QNS) formulated by the hospital, and QOL referring to QLQ-C30. Results: After preoperative nursing, significantly decreased HR, SBP and DBP, biochemical indicators, SAS and SDS, postoperative incidence of complications, and significantly increased nursing satisfaction and QLQ-C30 scores were observed in Group A compared with Group B ($P<0.05$). Conclusion: Humanistic nursing of patients in the OR can ameliorate the patients' anxiety, stabilize their vital signs (VS), alleviate psychological stress responses, reduce POI and improve the nursing satisfaction of the patient and family members, as well as improve QOL after surgery.

Keywords: Humanistic nursing, routine nursing, surgical operation, stress response, POI

Introduction

Surgery is an invasive treatment which may produce negative emotions and mental pressure on patients by virtue of their fears and uncertainty of prognosis [1], resulting in dysfunction of the nervous system, endocrine system and circulatory systems, and giving rise to stress responses [2, 3] and fluctuations in VSs such as pulse, HR and breathing. In more serious cases, an excessive stress response will compromise the immunologic functions of the organs, causing the patients to be more susceptible and vulnerable, and affect the surgical effects and postoperative recovery [4, 5]. Invasive surgeries easily cause infectious complications, and even affect the postoperative recovery and QOL of the patients in serious cases [6, 7].

With the development of the economy, people are living a better life, and thus have higher demands on medical care levels and services that can't be satisfied through a routine nursing intervention model [8]. In the OR, the quality of clinical nursing is vital to the life and safety of the patients in the operating room [9]. OR paramedics have to cooperate with the surgical process but also embody humanistic concepts in their work [10]. For this purpose, a humanistic nursing model refers to the combination of technical elements with affectionate, cultural and spiritual services according to various requirements from individual patients, in which, respect is shown to them [11-13]. Studies have shown that a sound nursing intervention mechanism is conducive to the rapid recovery of patients [14]. A lot of studies have been conducted to research the application of humanistic nursing in the clinic, including de et al., who proved information on the prominent contribution of humanistic nursing to the recovery of patients in severe cases.

In this study, surgery patients received humanistic nursing applications to explore the timely effects of reducing patients' stress responses and POI in the OR.

Material and methods

Subjects

In total, 52 patients from the Surgical OR of our hospital were included as the study subjects and randomized into Group A (n=36) and Group B (n=36). Group A included 24 males and 12 females aged between 27 and 71, with average age of (52.3±6.8); of whom, 11 were to receive surgeries on five different organs, 13 thoracically, and 12 abdominally. The control group included 20 males and 16 females aged between 32 and 72, with average age of (51.4±6.5); of whom, 14 were to receive surgeries on five different organs, 12 thoracically, and 10 abdominally.

Inclusion and exclusion criteria

Patients from both groups satisfied the conditions for surgical operation [15] with stable VSs, complete general clinical information, and expected survival time ≥1. The study has been approved by the Ethics Committee of the Hospital, all patients were informed about the study and they or their families signed an Informed Consent. Patients with the following conditions were excluded: cognitive disorders, candidates of laparoscopic and emergency surgeries, severe hepatic and renal dysfunction, coagulation disorders, language and listening dysfunction, pregnant or lactating women, or patients with psychosis or family psychiatric history.

Nursing methods

Patients in Group B received routine nursing, including close monitoring of VSs such as HR, body temperature and blood pressure. Before surgery, ward nurses made routine preparations, while paramedics introduced the preoperative preparations and postoperative observation contents, they provided preoperative health education, routine encouragement during surgery, and information about preventing complications after surgery, etc.

In addition to the routine nursing services provided for Group B, patients in Group A received humanistic nursing with specific measures as follows: a nursing team was built with 1 departmental director, 1 doctor in charge, 2 nurses, 1 nutritionist, and 2 lineal kins of the patients. All team members were trained by the nurse in charge for relevant knowledge and skills, and the patients were assessed for physical conditions, for which, nursing actions were taken under the supervision of the head nurse who is also responsible for inspection of the implementation quality. The humanistic nursing intervention model also included dynamic management such as interactions between the team and the patient with leadership of the departmental director. More specifically, humanistic nursing requires: (1) Preoperative nursing, which included psychological nursing interventions to analyze the patient's fears and doubts based on their specific conditions, targeted communication to alleviate anxiety, depression and fear, and establishment of a trusting relationship to relieve the patient from any negative emotions. In terms of diet, instead of spicy and stimulating food, only food rich in protein, calories and vitamins, that are easily digested was given to the patients in order to improve their resistibility. Patients were also assisted in the examinations before the surgery. (2) Intraoperative nursing: patients were guided for preoperative preparation and encouraged to face the surgery bravely, while the OR was made comfortable at proper temperature and humidity. All surgical movements were gentle and soft, and eye contact and language used for encouragement were necessary for patients who were under local anesthesia. (3) Postoperative nursing: patients were transported to the ward, inspected frequently, massaged to relieve pain, and guided for relaxation exercises. Measures such as ARM and backslapping were adopted depending on the patient's conditions to ensure smooth breathing. Patients were communicated with to understand any subjective feelings they may have, and given answers for any questions. Incisional wounds were checked for any complications such as bleeding or infection, and the patients as well as their family members were reminded of notes for recovery after surgery.

Observation indicators

Patients of both groups were observed and recorded for any change in HR, SBR, DBP, and

Table 1. General Data on Patients in Group A and Group B [n (%)] (x±sd)

Classification	Group A (n=36)	Group B (n=36)	t/χ^2 value	*P* value
Gender			3.600	0.067
Male	24 (66.67)	20 (55.56)		
Female	12 (33.33)	16 (44.44)		
Age in Year	52.3±6.8	51.4±6.5	0.574	0.568
BMI (kg/m^2)	22.29±3.91	21.84±4.07	0.478	0.634
Domicile			0.644	0.422
Urban	28 (77.78)	25 (69.44)		
Rural	8 (22.22)	11 (30.56)		
Nationality			0.575	0.448
Han	23 (63.89)	26 (72.22)		
Minority	13 (36.11)	10 (27.78)		
Educational Background			0.321	0.571
≥ High School	27 (75.00)	29 (80.56)		
< High School	9 (25.00)	7 (19.44)		
History of Smoking			0.234	0.629
Y	21 (58.33)	23 (63.89)		
N	15 (41.67)	13 (36.11)		
History of Drinking Alcohol			0.262	0.609
Y	24 (66.67)	26 (72.22)		
N	12 (33.33)	10 (27.78)		
History of Diabetes			0.552	0.458
Y	25 (69.44)	22 (61.11)		
N	11 (30.56)	14 (38.89)		
Surgical Mode			0.582	0.748
On organs	11 (30.56)	14 (38.89)		
On thorax	13 (36.11)	12 (33.33)		
On abdomen	12 (33.33	10 (27.78)		

POI 1d before the surgery and before anesthesia.

To evaluate the patients' anxiety and depression, SAS [12] and SDS [13] were adopted, and each contained 20 items which may be marked 1 to 4 according to the criteria of; 1 for Sometimes, 2 for Half the Time, 3 for Frequently, and 4 for Always. Higher points indicate more sever anxiety or depression. The critical values of SAS and SDS were 50 and 53 respectively.

Five mL blood was taken from the veins of patients when they were hospitalized and 30 min after preoperative nursing under a fasting state, which was then centrifuged at a speed of 670.8 (×g) and temperature between 20 and 25°C for 10 min to harvest the serum. Both groups were tested for corticoid (Col), blood sugar (Glu), noradrenaline (NE), and epinephrine (E) with an ACIA (Wuhan Easydiagnosis Biomedicine Co., Ltd., product No.: CF10).

One day before discharge, patients were assessed for their nursing satisfaction via the QNS formulated by the hospital, which included 20 questions about attitude, personality, dressing, and operation sophistication, etc. Each question was valued at 5 points, and the full mark is 100. Higher points indicate more nursing satisfaction.

Patients' QOL 6 months after discharge was evaluated referring to the QLQ-C30 which consists of 4 parts, i.e., condition control, life behavior, motion and psychological emotion. Each part values 100. Higher points indicate better life.

Statistical method

SPSS 17.0 (Beijing Strong-Vinda Information Technology Co., Ltd., China) was adopted for statistical analysis. Nominal data were expressed in n (%) and subject to chi-square test between groups or chi-squared test with continuity correction where the theoretical frequency in chi-square test falls under 5. Measurement data were expressed in $\bar{x}$±sd, and subject to independent-samples t test between groups or paired t-test in the same group for pre-and-post comparison. P<0.05 indicates a statistically significant difference.

Results

General data

No significant difference (P>0.05) was observed between the two groups in age, gender, BMI, domicile, nationality, educational background, history of smoking and drinking alcohol, history of diabetes, and surgical mode (**Table 1**).

Table 2. Changes in HR and BP in the Two Groups (x±sd)

Group Type	N	HR (time/min)		SBP/mmHg		DBP mmHg	
		1 d before Surgery	Preoperative Nursing	1 d before Surgery	Preoperative Nursing	1 d before Surgery	Preoperative Nursing
Group A	36	75.6±6.7	82.5±7.3	120.1±10.5	126.7±11.3	72.1±8.9	83.4±9.1
Group B	36	75.9±6.8	95.3±8.2	120.3±10.8	138.4±12.2	72.3±9.1	90.3±9.5
t		0.189	6.995	0.079	4.221	0.094	3.147
P		0.851	<0.001	0.937	<0.001	0.925	0.002

Table 3. Changes in Biochemical Indicators upon Hospitalization and before Surgery between the Two Groups (x±sd)

Group Type	n	Col (ng/L)		Glu (mmol/L)		NE (pg/L)		E (pg/L)	
		Upon Hospitalization	Preoperative Nursing	Upon Hospitalization	Preoperative Nursing	Upon Hospitalization	Preoperative Nursing	Upon Hospitalization	Preoperative Nursing
Group A	36	225.6±43.1	245.3±38.7	4.4±0.3	5.5±0.4	145.6±19.3	156.7±21.3	33.7±5.2	36.7±5.9
Group B	36	228.3±43.9	317.6±34.2	4.3±0.4	7.1±0.4	143.8±18.9	197.8±23.4	33.4±5.6	70.5±6.2
t		0.263	8.399	1.200	16.970	0.399	7.793	0.815	23.700
P		0.793	<0.001	0.234	<0.001	0.691	<0.001	0.236	<0.001

Table 4. Comparison between the Two Groups in SAS and SDS before Nursing (x±sd)

Group Type	N	SAS		SDS	
		Before Nursing	After Nursing	Before Nursing	After Nursing
Group A	36	47.9±3.4	31.7±3.4	47.1±4.1	34.5±4.5
Group B	36	48.1±4.0	44.7±5.7	48.2±5.5	46.8±5.1
T		0.229	11.750	0.962	10.850
P		0.819	<0.001	0.339	<0.001

Changes in HR and BP

HR, SBP and DBP in the two groups were significantly raised by the preoperative nursing (P<0.05) as compared with the values 1 d before the surgery when there was no significant difference (P>0.05), and Group A was significantly lower than Group B (P<0.05) (**Table 2**).

Changes in biochemical indicators upon hospitalization and before surgery

Col, Glu, NE and E in the two groups were significantly raised by the preoperative nursing (P<0.05) as compared with the same values upon hospitalization when there was no significant difference (P>0.05), and Group A was significantly lower than Group B (P<0.05) (**Table 3**).

Comparison of SAS and SDS before and after nursing

SAS and SDS in the two groups were significantly reduced by the preoperative nursing (P<0.05) as compared with the values before nursing when there was no significant difference (P>0.05), and Group A was significantly lower than Group B (P<0.05) (**Table 4**).

Comparison of POI

Complications reported in Group A after surgery included respiratory tract infection (1, 2.78%), urinary tract infection (0, 0.00%), pulmonary infection (1, 2.78%), and infection of the incisional wound (1, 2.78%), with a total incidence of 11.11%. Complications reported in Group B after surgery included respiratory tract infection (3, 8.33%), urinary tract infection (1, 2.78%), pulmonary infection (3, 8.33%), and infection of incisional wound (4, 11.11%), with total incidence of 30.56%. The postoperative incidence of complications in Group A was significantly lower than Group B (P<0.05, **Table 5**).

Comparison of nursing satisfaction

Group A had a satisfaction score of (95.33±2.68) which was significantly higher than Group B of (81.49±4.62) (P<0.05, **Figure 1**).

Table 5. Comparison between the Two Groups in POI [n (%)]

Group Type	n	Respiratory tract infection	Urinary tract infection	Pulmonary infection	Infection of incisional wound	Total incidence
Group A	36	1 (2.78)	0 (0.00)	1 (2.78)	1 (2.78)	4 (11.11)
Group B	36	3 (8.33)	1 (2.78)	3 (8.33)	4 (11.11)	11 (30.56)
χ^2 value	-	1.059	1.014	1.059	1934	4.126
P value	-	0.304	0.314	0.304	0.164	0.042

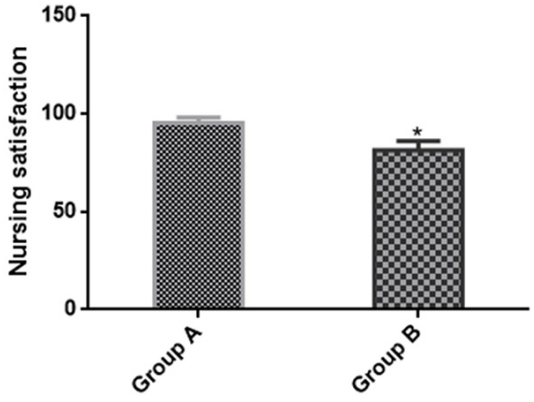

Figure 1. Comparison of nursing satisfaction between the two groups. Group A was significantly higher than Group B (P<0.05). Note: compared with the nursing satisfaction of Group B, *<0.05.

Items in QOL

The points assigned to condition control, life behavior, motion, and changes in psychological emotion, the 4 items constituting QLQ-C30, were (90.46±2.48), (93.46±2.45), (92.58±2.06) and (90.43±2.18) respectively in Group A; and (82.59±3.26), (84.69±3.57), (83.91±3.07), and (85.21±1.36) respectively in Group B after nursing (P<0.05, **Figure 2**).

Discussion

Recent years have witnessed a gradual enhancement in patients' self-protection of their rights and interests, and awareness on medical safety. The manner a nurse speaks or acts may directly affect the patients' perception of nursing quality and subjective perspective on treatment effect [16], while a comfortable and effective nursing mode in the perioperative period improves clinical nursing quality and alleviates patients from negative psychology [17, 18].

With little knowledge about relevant surgeries and worries on the surgical results, patients often feel anxious and nervous [19], which leads to physiologic derangement and hemodynamic changes, and an increased possibility of postoperative complications [20, 21]. As a scientific nursing model, humanistic nursing is characterized by integrity, effectiveness and creativity, which satisfies patients' reasonable psychological demands, and guarantees their comfort in all aspects [22, 23]. Humanistic nursing is provided in the OR with the ultimate goals of ensuring a successful surgery, and that the patients can be carefully and sincerely nursed [24]. This helps to reduce their psychological and physiological pressure, and fears about surgery as the patients gain more confidence in the surgery and the medical team, they will actively cooperate to maximize surgical safety [25]. In the studies by Gao et al. [26], humanistic nursing and personalized service can effectively relieve patients from fear and anxiety, stabilize VSs such as HR and blood relatively, so that they can be more positive, optimistic and cooperative until full recovery. In addition, the studies by Xunwen et al. [27] also proved the role of humanistic nursing in ophthalmological surgeries by improving clinical nursing quality and nursing satisfaction, which can be clinically popularized and applied.

According to our study results that Group A was lower than Group B in HR, SBP, DBP, Col, Glu, NE and E, SAS, SDS and POI, but higher in postoperative nursing satisfaction and QLQ-C30 scores indicated that humanistic nursing can stabilize the patient's VSs with less fluctuations and psychological stress, improve resistivity to surgery and accelerate recovery, eliminate or alleviate psychological blocks such as anxiety and depression during surgery, consolidate treatment compliance, benefit the surgical process and effects, effectively regulate negative emotions, improve cooperation in surgery and reduce POI, ameliorate anxiety and reinforce nursing satisfaction of the patient and their family members as well as QOL.

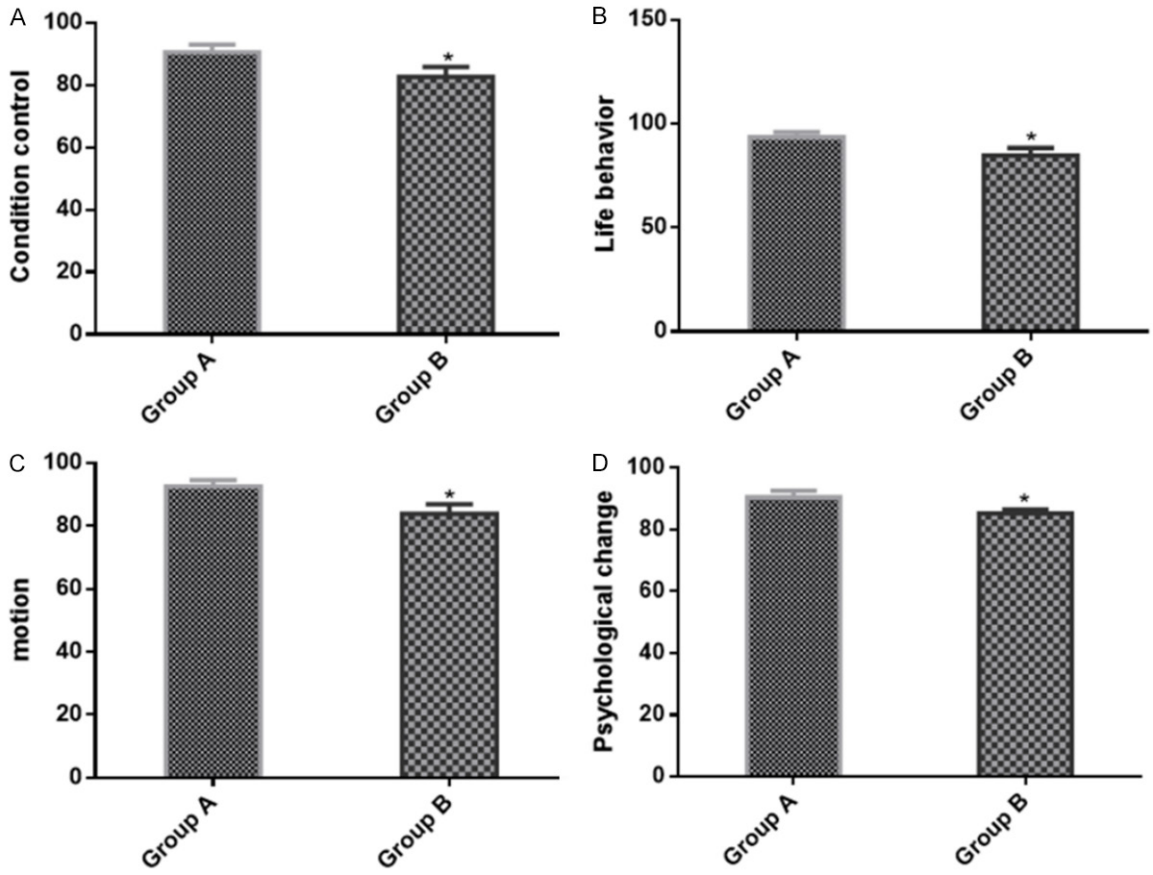

Figure 2. Comparison of QOL scores between the two groups. Group A was significantly higher than Group B in QLQ-C30 scores ($P<0.05$). Note: compared with the QLQ-C30 scores of Group B, *<0.05.

In conclusion, humanistic nursing of patients in the OR can ameliorate the patients' anxiety, stabilize their vital signs (VS), alleviate psychological stress response, reduce POI and improve the nursing satisfaction of the patient and their family members, as well as QOL after surgery.

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Disclosure of conflict of interest

None.

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References

[1] Palm NM, McKinzie B, Ferguson PL, Chapman E, Dorlon M, Eriksson EA, Jewett B, Leon SM, Privette AR and Fakhry SM. Pharmacologic stress gastropathy prophylaxis may not be necessary in at-risk surgical trauma icu patients tolerating enteral nutrition. J Intensive Care Med 2018; 33: 424-429.

[2] Carli F. Physiologic considerations of enhanced recovery after surgery (ERAS) programs: implications of the stress response. Can J Anaesth 2015; 62: 110-119.

[3] Zhang T, Tian X, Wang Q, Tong Y, Wang H, Li Z, Li L, Zhou T, Zhan R, Zhao L, Sun Y, Fan D, Lu L, Zhang J, Jin Y, Xiao W, Guo X and Chui D. Surgical stress induced depressive and anxiety like behavior are improved by dapsone via modulating NADPH oxidase level. Neurosci Lett 2015; 585: 103-108.

[4] Iwasaki M, Edmondson M, Sakamoto A and Ma D. Anesthesia, surgical stress, and "long-term"

outcomes. Acta Anaesthesiol Taiwan 2015; 53: 99-104.
[5] Sridhar P, Sistla SC, Ali SM, Karthikeyan VS, Badhe AS and Ananthanarayanan PH. Effect of intravenous lignocaine on perioperative stress response and post-surgical ileus in elective open abdominal surgeries: a double-blind randomized controlled trial. ANZ J Surg 2015; 85: 425-429.
[6] Carli F, Gillis C and Scheede-Bergdahl C. Promoting a culture of prehabilitation for the surgical cancer patient. Acta Oncol 2017; 56: 128-133.
[7] Alkhatib H, Tastaldi L, Krpata DM, Scheman J, Petro CC, Fafaj A, Rosenblatt S, Rosen MJ and Prabhu AS. Prevalence of posttraumatic stress disorder (PTSD) in patients with an incisional hernia. Am J Surg 2019; 218: 934-939.
[8] Dupre ME, Xu H, Granger BB, Lynch SM, Nelson A, Churchill E, Willis JM, Curtis LH and Peterson ED. Access to routine care and risks for 30-day readmission in patients with cardiovascular disease. Am Heart J 2018; 196: 9-17.
[9] Zhou XH. Humane care applications and effect in operating room care. 2012.
[10] Lai XX, Wu JB, Chen S, Lai P, Wang XH, Wang YY, Luo YN and Lin H. Risk factors analysis and security application discussion of Polygonum multiflorum based on retrospective study. Zhongguo Zhong Yao Za Zhi 2018; 43: 3205-3210.
[11] Salazar B and Alberto O. Humanized care: a relationship of familiarity and affectivity. Invest Educ Enferm 2015; 33: 17-27.
[12] Medeiros AC, Siqueira HC, Zamberlan C, Cecagno D, Nunes SD and Thurow MR. Comprehensiveness and humanization of nursing care management in the intensive care unit. Rev Esc Enferm USP 2016; 50: 816-822.
[13] Mosqueda LJ. Person-centered care: a definition and essential elements. J Am Geriatr Soc 2016; 64: 15.
[14] Hugonnet S, Harbarth S, Sax H, Duncan RA and Pittet D. Nursing resources: a major determinant of nosocomial infection? Curr Opin Infect Dis 2004; 17: 329-333.
[15] Rose J, Weiser TG, Hider P, Wilson L, Gruen RL and Bickler SW. Estimated need for surgery worldwide based on prevalence of diseases: a modelling strategy for the WHO Global Health Estimate. Lancet Glob Health 2015; 3 Suppl 2: S13-20.
[16] Aiken LH, Clarke SP, Sloane DM, Sochalski J and Silber JH. Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. JAMA 2002; 288: 1987-1993.
[17] Portela RA, Hootnick J and McGinn J. Perioperative care in functional endoscopic sinus surgery: a survey study. Int Forum Allergy Rhinol 2012; 2: 27-33.
[18] Gustafsson BÅ, Heikkilä K, Ekman SL and Ponzer S. In the hands of formal carers: older patients' experiences of care across the perioperative period for joint replacement surgery. 2010; 14: 96-108.
[19] Kain ZN, Caldwell-Andrews AA, LoDolce KW and Anesthesiology SJ. The perioperative behavioral stress response in children. 2002; 96: A1242.
[20] Archer S, Pinto A, Vuik S, Bicknell C, Faiz O, Byrne B, Johnston M, Skapinakis P, Athanasiou T, Vincent C and Darzi A. Surgery, complications, and quality of life: a longitudinal cohort study exploring the role of psychosocial factors. Ann Surg 2019; 270: 95-101.
[21] Chiariello GA, Bruno P, Colizzi C, Crea F and Massetti M. Takotsubo cardiomyopathy following cardiac surgery. J Card Surg 2016; 31: 89-95.
[22] Beltrán Salazar OA. The meaning of humanized nursing care for those participating in it: importance of efforts of nurses and healthcare institutions. Invest Educ Enferm 2016; 34: 18.
[23] Barbosa da Silva A. Holistic nursing. Holistic viewpoint in nursing care--a question of being human. Fag Tidsskr Sykepleien 1989; 77: 18-20.
[24] Rôlo B, Santos B, Duarte I, Pires L and Castro C. Humanization of nursing care in the emergency service: a systematic review. Ann Med 2009.
[25] Evangelista A, Leite JNF, Coelho SB and Figueira ME. Universidade aberta a terceira idade: paradigma de uma ambiente inclusivo e intergeracional. 2011.
[26] Gao M, Zhao J, Mei N and Gao C. Analysis of the effects of humanized nursing and personalized service in operating room nursing. Chinese Medical Ethics 2017.
[27] Murthy KR, Dammalli M, Pinto SM, Murthy KB, Nirujogi RS, Madugundu AK, Dey G, Subbannayya Y, Mishra UK and Nair B. A comprehensive proteomics analysis of the human iris tissue: ready to embrace postgenomics precision medicine in ophthalmology? OMICS 2016; 20: 510-519.