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Original Article

Effect of Preoperative Nursing Intervention on Postoperative Outcome among Septoplasty Surgery Patients

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1.ABSTRACT

Background: A deviated nasal septum can result in a number of adverse health consequences. Septoplasty is surgery inside the nose to straighten a deviated septum. The importance of caring within the field of nursing is significant in the overall health outcome of a patient. **Aim:** Evaluate the effect of preoperative nursing intervention on postoperative outcome among septoplasty surgery patients. **Method:** The study was carried out at the nose, ear, throat and maxillofacial unit and outpatient's clinics in Specialized Medical Hospital affiliated to Mansoura University Hospitals. A purposive sample of 60 patients were enrolled and studied by structured interview questionnaire which included demographic data sheet, health relevant data sheet and Sino-Nasal Outcome Test (SNOT-22). **Results:** The study reported that there was no statistically significant difference between study and control group pre intervention, where (p-value >0.05). Post intervention, according to Sino-Nasal Outcome Test score, (26.7%) of study group compared to (63.3%) of control group have sever nasal problems. **Conclusion:** preoperative nursing intervention is an important aspect in patients care and can guide health care staff to save the patients from long term chronic complications associated with septoplasty.

Key words: *Nursing Intervention, Postoperative Outcome, Septoplasty.*

2.Introduction

Respiration is a vital process for the normal function at every level of organization from a cell to an organism. Respiratory rate will adjust to meet the needs of the body, as oxygen demand increases and carbon dioxide builds up **(Haddad & Sharma S., 2021).** The quality of breathing, and the way of breathing, either through mouth or preferably through the nose, can impact physical, mental and emotional wellbeing. In addition, breathing through the nose stimulates the production of nitric oxide (NO) in the naso-pharyngeal area which is a potent vasodilator and body regulator. It is also a powerful bactericide and helps to keep the sinuses free from infection. Nasal breathing, also important to warms, humidifies and filters the air reducing the chances of enlarged tonsils, allergies and other chronic respiratory problems, balancing out and optimizing carbon dioxide levels in the lung **(Chourpiliadis & Bhardwaj., 2021).**

Deviated nasal septum is a frequently occurring condition that can cause nasal obstruction in an individual. It may result in permanent changes in the nasal and sinus mucosa because of altered ventilation of the nasal cavity. They are commonly seen with external nose deformities. The most common acquired cause is trauma from motor vehicle collisions, sports-related injuries, and altercations. Symptomatic patients can present with unilateral nasal obstruction or less commonly epistaxis, obstructive sinusitis, and/or pain/pressure symptoms. **(Shetty et al., 2021).**

A deviated nasal septum can lead a person to breathe through their mouth instead of their nose, that can result in a number of adverse health consequences as introduction of unfiltered, poorly humidified air into the lungs, chronic over-breathing, greater incidence of snoring and sleep apnea, dysfunction of the jaw joint (temporomandibular joint disorders), loss of lip tone with the lips becoming flaccid, speech and swallowing problems, trauma to soft tissues in the airways, and enlarged tonsils and adenoids **(Ruth., 2016).**

Septoplasty is the most common surgical procedure performed to straighten nose. The "four R's" of nasal septal repair are Resection, Reposition, Reconstruction, and Replacement can be used to straighten the septum and maximize

nasal appearance and function **(Standring., 2020; Balai, Jolly, Bhamra, Osborne & Barraclough., 2021).**

The importance of caring within the field of nursing is significant in the overall health outcome of a patient. Caring is important for nurses to display empathy, support, and confidence, when establishing a relationship with a patient. The idea of caring is crucial when offering care to a patient and determining a care plan that is achievable. The role a nurse displays helps patients and families achieve a positive outcome. A nurse must be organized, creative, flexible, and thorough with all plans and actions that need to be appropriated (**Lewis, Bucher, Heitkemper, Dirksen., 2020).** Therefore, it is very important to explain the effect of nursing care provided pre and post nasal septal operation and its results

Therefore, the aim of this study was to evaluate the effect of preoperative nursing intervention on postoperative outcome among septoplasty surgery patients.

Aim of the study:

This study aimed to investigate the effect of preoperative nursing intervention on postoperative outcome among septoplasty surgery patients.

3. Methods

3.1Research Design:

A quazi experimental research design was utilized to achieve the aim of the study.

3.2Setting:

The study was conducted at nose, ear, throat and maxillofacial unit and outpatient's clinics in Mansoura University Hospitals.

3.3 Study Sample:

A purposive sample of 60 patients in previously mentioned setting and fulfilling the following criteria. ***Inclusion criteria*** (adult patients at the age of 20-60 years, both gender, able to communicate and understand instructions, Welling to participate in the study and • Scheduled for septoplasty surgery.

Exclusion criteria: Patients on other complicated medical conditions such as perforated nasal septum or previous nasal surgery, Sino-nasal malignancy, Acute facial trauma or fracture, Hyperplasic pharyngeal tonsils and Patients suffering sleep apnea.

3.4Tools of data collection

Two tools were used in the study for collecting pertinent data as follow.

Tool I: A structured interview Questionnaire:

This tool was developed by the researcher after reviewing relevant literatures **(Standring., 2020; Balai, Jolly and Moghaddam, Garcia, Frank-Ito, Kimbell & Rhee., 2020)**

This tool consisted of three parts:

Part 1: Patient's Demographic Data: This part used to address the personal data of the patients; it was include patient's age, gender, marital status, level of education and occupation.

Part 2: Health Relevant Data: This part includes a complete history detailing the nature and extent of nasal symptoms, symptoms of other sino-nasal or systemic pathology, including allergies, drug history with a particular focus on intranasal decongestants and corticosteroids, smoking, previous nasal or sinus surgery, issues with prior anesthetics, or bleeding conditions, quality of the mucosa (signs of inflammation), comorbid rhinologic diseases such as allergic rhinitis, chronic sinusitis, and history of facial trauma

Part 3: Postoperative assessment: It includes the most serious complication due to infection, septal hematoma, nasal packing, bleeding (excessive bleeding; some oozing or extensive bleeding), discomfort upon swallowing, septal hematoma, adhesions, oxygen saturation, and level of pain assessed using a VAS (visual analogue scale; a scale between 1 and 10; 1 minimal, 10 unbearable).

Tool II: Sino-Nasal Outcome Test (SNOT-22) (Buckland, Thomas & Harries., (2003)

The22-item Sino-Nasal Outcome Test (SNOT-22) is a widely applied patient-reported outcome instrument used to register the degree of improvement after septoplasty surgery. It is a validated questionnaire of disease-specific, quality-of-life (QoL)-related measures of sino-nasal function. A SNOT-22 questionnaire was completed at the outpatient clinic.

Scoring system

The SNOT - 22 has 22 items and was recently reported to be valid & easy to use. In the Questionnaire, patients rate each item from 0 (no problem) to 5 (problem as bad as it can be). The total maximum number of points in the SNOT-22 is thus 22x5 = 110 points. The patient is also asked to mark at maximum the five most important items. The scoring of SNOT22 points is as mentioned below: (0= no problem, 1= very mild problem, 2= mild or slight problem, 3= moderate problem, 4= severe problem, 5= problem as bad as it can be.)

3.5 Validity of tools:

revised by a panel of five experts in the field of medical- surgical nursing and 2 experts from the field of medicine

3.6Reliability:

they were tested by using Cronbach's Coefficient Alpha test and it was 0.898.

3.7Data collection process:

This study was conducted in three phases:

Phase I: Preparatory phase

- Ethical approval was obtained from the Faculty of Nursing, Mansoura University as well as Research Scientific Ethical Committee. An official permission to conduct the study was obtained from the dean of Faculty of the Nursing Mansoura University.
- Permission was obtained from Mansoura University Hospitals directors, affiliated to Mansoura University Hospitals.
- Written informed consent was obtained from patients to participate in the study after explaining the purpose of the study and confidentiality was preserved.
- Tool I was developed by the researcher after reviewing relevant literatures **(Standring., 2020; Balai, Jolly and Moghaddam, Garcia, Frank-Ito, Kimbell & Rhee., 2020).**
- Tool II was adopted from **(Buckland, Thomas & Harries., (2003)** to register the degree of improvement after septoplasty surgery
- The study tools was reviewed by a jury of seven experts representing related medicine and nursing field to test validity and reliability of the tools and all the necessary modification was done accordingly.
- Pilot study was carried out on 10 % (6 patients) of the study sample to test feasibility, objectivity, clarify and the applicability of the study tools, it was excluded from the study sample, the necessary modification will be done accordingly.
- Session plan and colored booklet with simple Arabic language was developed by the researcher after reviewing recent literature.

Phase II: Implementation phase:

- The researcher attended to Nose, Ear, Throat and Maxillofacial unit department inpatient department and out patients' clinics every day from 8:30 Am to 2:00 Pm from august to December 2022.
- Patients who match sampling criteria & who accept to participate in the study was divided into two equal groups, study group submitted to nursing care protocol plus routine hospital care for patients submitted to septoplasty surgery (A) and control group (B) who will receive routine nursing care.
- A comfortable, private place was chosen for the interview. The researcher started by introducing herself to the patients and giving them a brief idea about the aim and nature of the study. Then, an oral consent from each participant was obtained
- Assessment aimed to collect data from patients under the study to identify demographic data by using (Tool I, part 1), health relevant data by using (Tool I Part 2) and postoperative assessment by using (Tool I Part 3) and evaluation of Sino-Nasal Outcome using tool II.
- Each patient was given written instructions including nursing care protocol for patients submitted to septoplasty surgery.
- Interviewing was done with each patient individually to illustrate the aim of the study, gain permission to share applied pre-test.
- Giving all instruction regarding booklet and answer any questions, several teaching methods such as brain-storming, discussion, handouts, and the use of illustrated media (video, pictures and PowerPoint presentation). Time needed to 30-45 minute for each patient
- The phone number was given to patients to facilitate communication and give chance to patient for any explanation and helping.

Phase III: Evaluation phase:

The impact of preoperative nursing intervention on patients submitted to septoplasty surgery was assessed though comparison between the intervention and control group after 7 days after implementation of proposed nursing intervention using tool I (part 3) and tool II. Follow up assessment carried out after first and third month after surgery using tool I (part 3) and tool II.

3.8Ethical considerations and Human Rights:

Ethical consideration and human rights:

An ethical approval was obtained from the Research Ethics Committee of the Faculty of Nursing, Mansoura University to carry out the study. All relevant possible aspect was considered. Oral and written consent was obtained from each patient enrolled in the study after providing

comprehensive information about the nature of the study, aim, benefits, risks, compensation and alternative treatment. The investigator was emphasized that participation is absolutely voluntary. Participants was informed that they have the right to refuse to participate in the study and withdrawn at any time and their refusal to participate in the study was not affect on their care. Anonymity, privacy, safety and confidentiality was assured throughout the whole study.

3.9Statistical analysis of data:

All statistical analyses were performed using SPSS for windows version 20.0 (SPSS, Chicago, IL). Continuous data were normally distributed and were expressed in mean ± standard deviation (SD). Categorical data were expressed in number and percentage. Chi-square test (or fisher's exact test when applicable) was used for comparison of variables with categorical data. The reliability (internal consistency) test for the questionnaires used in the study was calculate

4.Results:

Table (1) show that, a total of (60) patients were enrolled in the current study. About one third (36.7%) of control group and half of study group were less than 25 years, with their mean age was (25.5 ± 6.2 and 27.6 ± 5.9) for the study and control groups respectively. Regarding gender, more than half (56.7%) of control group and slightly more than three fourth (80.0%) of study group were male. Concerning marital status, about half (53.3%) of control group were married compared to half (50.0%) of study group were single. Concerning level of education, the table illustrated that, half (50.0%) of study and control group were highly educated. As regards to occupation, about half (53.3%) of control group were not working compared to (56.7%) of study group were working. According to residence, (60.0%) of control group and (56.7%) of study group were live in rural area. No significant difference was detected between study and control group, where (p-value >0.05).

Table (2) show that, (16.7%) of control group were suffering excessive bleeding compared to only (3.3%) in the study group. Regarding signs of infection slightly less than one fourth of control (20.0%) exhibit signs of infection compared to only (3.3%) in study group. Septal hematoma and adhesions more prevailing among control group (70.0% and 76.7 respectively) than study group (33.3% and 40.0% respectively), Choking during sleep, appears in about one third (36.7%) of control group compared to only (6.7%) of study group. In reference to mean oxygen saturation, a highly statistically significant difference was detected between both groups, where (p-value <0.031).

Figure (1) reveals that, there was no significant difference between studied groups in relation to level of pain at pre intervention. In spite, at post intervention evaluation, a highly statistically significant difference was detected between both groups, where (p-value <0.013).

Figure(2) reveals that, according to Sino-Nasal Outcome Test score, there was no statistically significant difference between study and control group pre intervention, where (p-value >0.05). Post intervention, according to Sino-Nasal Outcome Test score, (26.7%) of study group compared to (63.3%) of control group have sever nasal problems. there was highly statistically significant difference between study and control group, where (p-value <0,004).

Table (1). frequency distribution of the studied groups regarding their demographic data (N=60)

	Control Group		Study Group		Chi-Square / Fisher's exact test	
	n	%	n	%	X^2	P
Age (Years)						
< 25	11	36.7	15	50.0		
25 – 30	11	36.7	8	26.7		
> 30	8	26.7	7	23.3	1.156	0.561
Mean ±SD	27.6 ±5.9		25.5 ±6.2		1.276	0.207
Gender						
Male	17	56.7	24	80.0		
Female	13	43.3	6	20.0	3.774	0.052
Marital status						
Single	13	43.3	15	50.0		
Married	16	53.3	13	43.3		
Divorced	1	3.3	2	6.7	0.787	0.675
Educational Level						

Illiterate	1	3.3	0	0.0		
Read and write	6	20.0	6	20.0		
Secondary school	8	26.7	9	30.0		
Highly educated	15	50.0	15	50.0	1.059	0.787
Occupation						
Not working	16	53.3	13	43.3		
Working	14	46.7	17	56.7	0.601	0.438
Residence						
Urban	12	40.0	13	43.3		
Rural	18	60.0	17	56.7	0.069	0.793

Table (2). Comparison between studied groups in relation to postoperative complications (N=60)

	Control Group		**Study Group**		**Chi-Square / Fisher's exact test**	
	N	%	n	%	X^2	P
Bleeding						
Some oozing	25	83.3	29	96.7		
Excessive bleeding	5	16.7	1	3.3	2.963	0.085
Signs of infection	6	20.0	1	3.3	4.248	0.039*
Septal hematoma	21	70.0	10	33.3	8.076	0.004*
Adhesions	23	76.7	12	40.0	8.297	0.003*
Choking during sleep	11	36.7	2	6.7	7.954	0.005*
Oxygen saturation (Mean ±SD)	95.8 ±2.6		97.8 ±3.4		2.559	0.031*

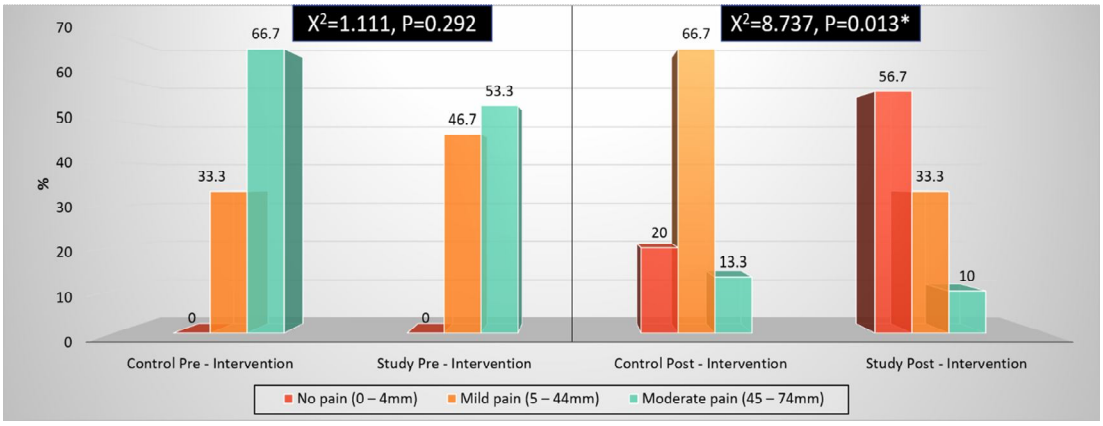

Figure 1. Comparison between studied groups in relation to level of pain pre and post intervention (N=60)

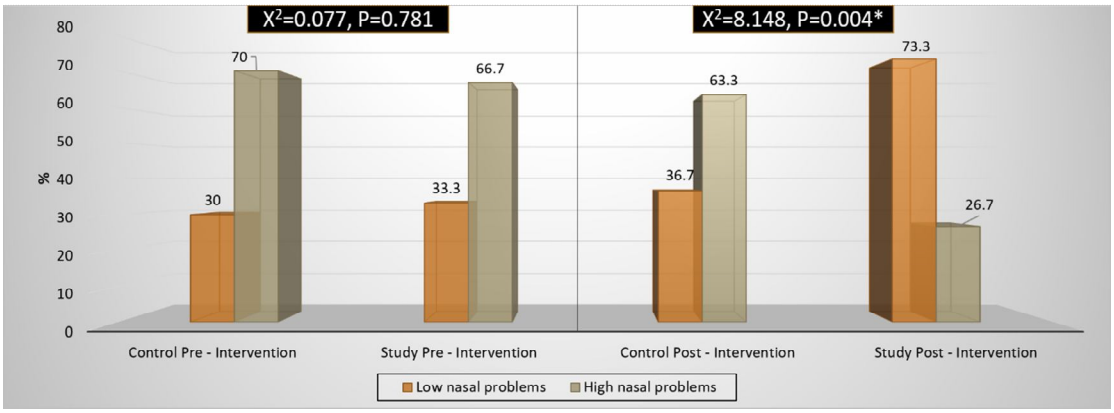

Figure 2. Comparison between studied groups in relation to degree of post septoplasty improvement (N=60)

5.Discussion:

A deviated septum with varied etiologies, necessitates a corrective surgical intervention in extensive static nasal obstruction, which is refractory to decongestive medical therapy. The interventions vary from a minor surgery for a septal spur to a major procedure. A scoliotic external deformity too is corrected by septal straightening. Deviated nasal septum is the commonest entity in the clinical practice of rhinology the incidence of deflected nasal septum is quite high **(Munjal, Arora, Munjal & Saggar, 2021).**

Septoplasty is performed to improve and conserve the balance and appearance of the nose and face to achieve satisfactory results for the patient, while simultaneously preserving and optimizing the important functions of the nose by improving breathing and reducing airway obstruction or snoring **(Youssef et al., 2018).**

Additionally, health care team must have a clear understanding of septal management because septal deviation may be observed in patients who do not exhibit external deviation (**Nilsen, Helvik, Thorstensen & Bugten, 2018**). In deviated nose correction, both aesthetic and functional aspects should be considered. Surgical treatment of nasal septal defect led to less symptoms and better HQOL **(Bulut et al., 2018).**

This study was done to evaluate the effect of preoperative nursing intervention on postoperative health outcome among septoplasty surgery patients, suggested that if there was a significant change in patients' health outcome pre & post implementing nursing intervention among Septoplasty Surgery Patients, there was a significant positive effect on improving knowledge among those patients

As regard to age in our study, Septoplasty Surgery Patients founded mostly in the third decade, that is may be related to disease process that usually detected in young ages, and also related to participation in sports as football which coincided with the studies by **Valsamidis et al., (2018) and García-Chabur et al., (2023)** they showed the prevalence of nasal septal deviation is increased in the same age group.

According to sex, there were slightly more than half of the study group and about three fourth of control group were males and the rest were females in our study that is may be related to that males engaged in vigorous activities and sports more than female, which supported by the results of **Jin, Kim and Jung, (2018)** who found that the majority of his studied sample were males. In another study of **Valsamidis et al., (2018)** reported that the prevalence of nasal septal deviation was higher among males than females.

According to residence, the majority of our studied groups were live in rural area. which agreed with **Lee et al,. (2021)** who showed that the most of their included sample live in rural area. ***In reference to smoking habits***, most of our studied groups were smokers, which agreed with **García-Chabur et al., (2023)**

Our study results revealed that, most of control group were suffering excessive bleeding, signs of infection, septal hematoma, adhesions and choking during sleep compared to study group. this may attributed to the positive effect of nursing education regarding care of nasal packing and correct position during sleeping.

Which agreed with **Tsang, Nguyen, Sivesind & Cervin, (2018)** and **Dąbrowska-Bień et al., (2018)** they reported that, excessive bleeding or some oozing are the most common expected complications post septoplasty. Also, there are more chances of infection with nasal packing & hospital stay is prolonged, in order to prevent these complications, counseling patients about this risk pre-operatively is critical**.**

On the other hand, **Dąbrowska-Bieńet al., (2018)** noticed that excessive bleeding, signs of infection, and other related sleep problems can be prevented by advising our patients about application of antibiotic ointment and irrigation with a saline solution 4–6 times daily to keep the splints clear and minimize potential crusting in post-op period.

In reference to mean oxygen saturation, a highly statistically significant difference was detected between both groups, where (p-value <0.031). it may be due to obstruction in the nasal passages suffered by control group that affect the mechanics of breathing. Conversely, study group following nursing instructions given by the researcher in the preoperative period regarding correct position, using decongestant and corticosteroids in correct way, stay away from irritants and cold air, and other instructions that help to keep nose patent and improve air flow through the nose

Our results was confirmed by **Munjal, Arora, Munjal & Saggar, (2021)** who documented that, unnatural mouth breathing, due to the disturbance of nose breathing, results in disturbance of pulmonary ventilation. Thus the breathing pattern has a direct influence upon

metabolism. The passage of air into and out of the nose acts as a physiological stimulus for a respiratory regulation reflex, and that nose breathing is of benefit, not only for the mixing of alveolar gas, but in pulmonary circulation as well because it is associated with greater pressure difference between inspiration and expiration, but in mouth breathing the thoracic movement becomes diminished.

Regarding pain, in post intervention evaluation, a highly statistically significant difference was detected between both groups. Considering the complexity and variability of the subjective feeling of nasal airway patency, study group may reasonably experience less pain sensation due to adherence to nursing educational program which decrease nasal obstructive symptoms that linked directly to nasal congestion and sensation of pain.

These results were in the line with the findings of **Dağli, Ocak, Mirici, Kaya & Acar, (2018)** who concluded that Postoperative pain from septoplasty remains a concern for prospective patients health, providing patients with health education regarding use of cold compresses, elevation of the head of the bed, and avoidance of straining, may help decrease postoperative pain and discomfort**.**

Another study by **Newberry et al., (2020)** agreed with our study results and confirmed that septoplasty commonly associated with postoperative pain, represent a high-impact area. The use of information leaflets increases patients' knowledge about a surgical procedure and its potential.

The entire process requires meticulous documentation in the patient's permanent health record so that all care team members can access the same updated and accurate patient information. This interprofessional approach will yield the optimal results with the fewest adverse events (**Khan et al., 2019)**

Patients with lower health literacy have been shown to have less knowledge of their disease, greater risk of hospitalization, inferior treatment compliance, poorer health, and higher mortality than people with adequate health literacy. These patients incur medical expenses up to 4 times greater than patients with adequate literacy skills, costing the health care system billions of dollars annually in unnecessary physician visits and hospital stays. Patient education and understanding of their medical conditions are critical to optimizing the patient-health staff relationship and the patient's overall health (**Erkin, Hanci & Ozduran, 2023).**

Finally, nursing interventions have significantly desirable effects on health outcome and increase knowledge level among patients suffering nasal septal deviation. Therefore, they should become an integral part of management of those patients. Thus, a health education for promoting patient's awareness and lifestyle modification is an urgent need for patients suffering nasal septal deviation.

6.Conclusion:

There were significant improvements in the total knowledge level among the studied patients in posttest compared to pretest after nurse-led intervention, which provided health education and presented written booklet.

There was a significant improvement in the health outcome among the study group compared to control group after application of preoperative nursing intervention for patients undergoing septoplasty. Preoperative nursing intervention aids in controlling postoperative complications. preoperative nursing intervention is an important aspect in patients care and can guide health care staff to save the patients from long term chronic complications associated with septoplasty.

7.Recommendations:

- preoperative nursing intervention should be integrated into medical outpatient clinic to assist septoplasty patients cope with their disease and help in healthy life modifications
- Investigating patients undergoing septoplasty with continues follow-up and check for adherence to drug regimen in the right way is important for prevention and control of postoperative complications

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