



Proposal of nursing diagnoses, outcomes and interventions for postoperative patients of orthognathic surgery

Proposta de diagnósticos, resultados e intervenções de enfermagem para pacientes em pós-operatório de cirurgia ortognática

Propuesta de diagnósticos, resultados e intervenciones de enfermería para pacientes en posoperatorio de cirugía ortognática

Giovana Lourenço Chagas de Assis¹, Cristina Silva Sousa¹, Ruth Natalia Teresa Turrini¹, Vanessa de Brito Poveda¹, Rita de Cassia Gengo e Silva¹

How to cite this article:

Assis GLC, Sousa CS, Turrini RNT, Poveda VB, Silva RCG. Proposal of nursing diagnoses, outcomes and interventions for postoperative patients of orthognathic surgery. Rev Esc Enferm USP. 2018;52:e03321. DOI: <http://dx.doi.org/10.1590/S1980-220X2017025303321>

¹ Universidade de São Paulo, Escola de Enfermagem, São Paulo, SP, Brazil.

ABSTRACT

Objective: To propose nursing diagnoses, outcomes and interventions for patients in the postoperative period of orthognathic surgery. **Method:** Secondary analysis of an information bank of a focal group with five patients submitted to orthognathic surgery. The classifications of the *North American Nursing Diagnosis Association International*, *Nursing Outcomes Classification* and *Nursing Interventions Classification* were used for elaborating nursing diagnoses, outcomes and interventions. Nursing diagnoses were identified based on the transcription of the focus group and the expected outcomes and interventions were proposed. In the second stage, the material was submitted to an analysis by judges for validating the previous stage. **Results:** After careful analysis of the retrieved information, nine nursing diagnoses that relate to both the difficulties already installed and to potential patient difficulties were identified. After this phase, the expected outcomes for nursing care and the appropriate interventions for the postoperative period at home were identified. **Conclusion:** Given the short hospital stay and the long postoperative period, the established actions have a strong educational focus.

DESCRIPTORS

Orthognathic Surgery; Postoperative Care; Nursing Process; Perioperative Nursing; Nursing Diagnosis.

Corresponding author:

Cristina Silva Sousa
Av. Dr. Enéas de Carvalho,
419 – Cerqueira César
CEP 05403-000 – São Paulo, SP, Brazil
crissousa@usp.br

Received: 06/13/2017
Approved: 12/14/2017

INTRODUCTION

Orthognathic surgery is a surgical procedure to correct dentofacial and maxillary (maxilla or mandible/jaw) deformities, and/or in the middle third region of the face. Misaligned teeth and bone structure create functional and aesthetic difficulties for patients with these problems⁽¹⁾.

For better function and aesthetics, the upper teeth should fit precisely on the lower teeth. In cases of growth dysfunction, trauma, or results from functional habits, if the maxillary and mandibular fit is not proportional, the patient will develop malocclusion, which consequently affects chewing, joint function, airway permeability and facial aesthetics⁽¹⁾. For treatment success, it is essential to combine treatment between the orthodontist and the maxillofacial surgeon, considering that orthodontic preparation is essential for correcting dental decompensations in the preoperative period in order to allow adequate bone positioning at the time of orthognathic surgery⁽²⁾. Orthodontic refinement is required after the surgical procedure for adjustments in the dental arch after surgical manipulation. This trajectory requires up to two years to be completed.

The main care needs of patients submitted to orthognathic surgery observed in a study using the focal group technique referred to anxiety related to the surgical process or (their) appearance after recovery due to the presence of edema, bleeding, or bruising; trigeminal, mental, lingual, buccal, facial, inferior alveolar and infraorbital nerve pains and damage, along with symptoms of paresthesia⁽³⁾.

Patients undergoing orthognathic surgery are usually hospitalized for short periods which may range from 12 hours to 3 days⁽⁴⁾. In this context, nurses need to plan post-discharge care for surgical patients. The (post-hospitalization) discharge plan should not only consider the needs identified in the preoperative period and those not resolved during hospitalization, but also those that arise in the postoperative period. Arranging care protocols by the type of surgery such as orthognathic surgery may positively contribute to the perioperative education of the patient and their close family members/persons, as well as for patient self-care.

An elaboration of care protocols can follow different models, among which is the nursing process. This is an instrument that requires theoretical support for its use. Stating the theoretical theory or model that supports the use of the nursing process is important because it allows for clarifying the focus of nursing care, as well as giving visibility to the profession. In addition, communicating diagnoses, outcomes and nursing interventions using standardized language systems brings benefits to the patient and to the health services⁽⁵⁾.

Researchers have shown concern in establishing the link between nursing diagnoses, outcomes and interventions among different settings, mainly due to the high number of possibilities for interventions and outcomes for each nursing diagnosis (ND)⁽⁶⁾, and to the fact that each ND portrays the clinical reasoning adopted in understanding the phenomenon and the proposed interventions, as well as

it being influenced by the environment in which they will be applied⁽⁷⁾ and by patient safety protocols.

Orthognathic surgery complications are described as the possibility of nerve damage, surgical site infection, temporomandibular dysfunction, improper fracture, alterations in the scarring process, hemorrhaging, exacerbated pain, soft tissue laceration, open bite, dental injury and problems with the fixation material⁽⁸⁾. During the postoperative period, patient assessment should consider possible surgical complications, sensitivity, motricity, analgesic control and symptom management related to the postoperative period⁽⁹⁾.

Although surgical patients have common care needs arising from the anesthetic-surgical process, complex surgical specialties also determine a particular set of care actions. The purpose of this study is to present a care plan for patients in the postoperative period of orthognathic surgery. This study has an important contribution to nursing, since it aims to qualify the care to oral and maxillofacial surgery patients. It is justified by the increase in orthognathic surgeries in hospital centers and the absence of publications of nursing diagnoses on this procedure in order to direct nurses in identifying both the risk factors that can lead to complications, and on the care based on patient needs.

Thus, this study aimed to propose nursing diagnoses, outcomes and interventions in postoperative orthognathic surgery patients.

METHOD

This is a secondary analysis of a previously published focus group information bank⁽³⁾. The focus group had five participants aged 18 years or older and submitted to orthognathic surgery in the 12 months prior to the date of the meeting (01/29/2011). The focus group was guided by five open questions in order to encourage patients to share their experience of the postoperative period, and therefore to identify the main difficulties encountered in this period.

The present study used the theoretical reference of Horta⁽⁵⁾ for identifying nursing diagnoses and the subsequent proposition of outcomes and interventions based on the information of the focus group. Horta's theory is based on the demonstration of basic human needs, which are understood as stress states essential for survival and result from homeostatic imbalances⁽¹⁰⁾.

The selection of nursing diagnoses was guided by Maslow's theory, which deals with human motivation and uses Mohana's classification to define basic human needs (psychobiological, psychosocial and psycho-spiritual needs)⁽¹⁰⁾. In this study, the focus was on expressed needs which are not latent, indicating an imbalance resulting from the surgery.

IDENTIFYING NURSING DIAGNOSES (ND) AND THEIR CONNECTION WITH THEIR RESPECTIVE NURSING OUTCOMES (NO) AND INTERVENTIONS (NI).

The focus group information was read by two nurses: one with experience in assisting patients submitted to orthognathic surgery, and another experienced in using the *North American Nursing Diagnosis Association International*

(NANDA). The analyzes were performed separately for each stage, with a subsequent joint discussion of the findings.

Patients' speeches regarding the difficulties experienced in the postoperative period allowed for identifying affected basic needs in patients submitted to orthognathic surgery in the postoperative period, such as difficulties with oral hygiene, feeding, postoperative symptoms and the recovery duration.

Once the needs expressed by the patients were identified, the ND were prepared according to the NANDA classification⁽¹¹⁾, considering the concept of diagnosis, defining characteristics and related factors.

Next, the expected outcomes were listed according to the *Nursing Outcomes Classification* (NOC). This classification is composed of several nursing outcomes which involve the state, behaviors and feelings in response to the provided

care⁽¹²⁾. Finally, the *Nursing Interventions Classification* (NIC) was used⁽¹³⁾ for the nursing interventions.

VALIDATION OF THE LINKS BETWEEN ND, NO AND NI

Four judges who met the following criteria were selected for this stage of the study: experienced in the study or in the use of the NANDA-NOC-NIC in care practice and/or knowledge of perioperative nursing care to patients submitted to orthognathic surgery. Regarding the profile of the judges, three (75%) had Doctorates in Nursing and two (50%) had specializations in perioperative nursing, all with clinical experience with ND.

The judges were invited to participate in the study to assess the relevance of the ND links with the NO and NI. Each NANDA-NOC-NIC link was assessed using a five-point Likert scale, which ranged from not relevant to completely relevant (Chart 1).

Chart 1 – Structure proposed for the ND, NO and NI validation for patients in the postoperative period of orthognathic surgery (for example with one of the problems being identified) – São Paulo, SP, Brazil, 2014.

Difficulty: maintenance of the orthodontic appliance when changing its elastic	Not relevant 1	Slightly relevant 2	Somewhat relevant 3	Very relevant 4	Completely relevant 5
Proposed Diagnosis: Ineffective Self-control of Health (00078) related to the complexity of the treatment, characterized by the expression of difficulties with the prescribed regimens and failure in acting to reduce risk factors.					
Proposed Intervention: Teaching: procedure/treatment (5618)					
Proposed Outcome: Knowledge: treatment procedures (1814)					
Suggestions:					

ND, NO and NI that obtained a Content Validity Index (CVI) above 75% regarding the judgment options of “very relevant (4) and completely relevant (5)” were classified. The following formula was used to calculate the CVI: (number of answers 3 and 4)*100/total of answers (1, 2, 3, 4 and 5), as proposed by DeVilles⁽¹⁴⁾. The judges' comments were analyzed for the outcomes with CVI < 75%. We chose to include statements from patients who referred to ND or NI to better illustrate the discussion.

This study was part of the thematic project “*Post-operative education: construction and validation of an educational technology for patients undergoing orthognathic surgery*”, approved by the Research Ethics Committee of the Nursing School of the Universidade de São Paulo (opinion no. 972/2010).

RESULTS

The identified patient needs were mostly related to those of a psychobiological level, and also to those of a psychosocial nature. No psycho-spiritual needs were reported.

The ND established as reference for patient care in the postoperative period of orthognathic surgery (n=13) belonged to the following domains: Health Promotion, Safety/Protection, Activity/Rest, Perception/Cognition, Self-perception, Coping/Stress Tolerance and Comfort.

A second analysis of the focus group information in relation to the previously selected ND identified that five ND had similar defining characteristics, related factors and risk factors in this group of patients. Thus, only nine ND were maintained.

The ND Impaired Swallowing was identified, however it was decided to keep the ND Impaired Oral Mucous Membrane; the same occurred by replacing the ND Disturbed Body Image with the ND Risk for Situational Low Self-esteem.

After careful analysis of the retrieved information, ND were identified that related to both the already installed difficulties as well as to a potential difficulty for the patient; for example, the ND Risk for Situational Low Self-esteem, which predicts the possibility of low self-esteem, but limited to the period of facial edema.

Once the ND were defined, the NO of the expected nursing care and the appropriate NI were identified for a safe postoperative period at home, considering that the hospital discharge is early and the postoperative recovery time is long, around 6 months.

The resulting material was submitted for validation by the judges. According to the pre-established criterion, diagnoses with CVI greater than or equal to 75% were maintained. The judges' comments and suggestions were carefully examined, and the resulting nine ND with their respective outcomes and interventions are presented in Chart 2.

Chart 2 – Relationship between ND, NO and NI for patients submitted to orthognathic surgery, according to the difficulty presented – São Paulo, SP, Brazil, 2014.

Difficulty	NANDA	NOC	NIC
Maintenance of the appliance by replacing its elastic /Maintenance of diet	(00078) Ineffective Health Management related to the complex treatment, characterized by the expression of difficulties with the prescribed regimens and failure to act to reduce risk factors.	Knowledge: Treatment procedures (1814)	Teaching: procedure / treatment (5618)
Obtaining reliable information	(00126) Deficiency of knowledge related to lack of exposure and erroneous interpretation of information, characterized by inadequate follow-up of instructions and verbalization of the problem.	Knowledge: Treatment procedure(s) (1814)	Teaching: preoperative (5610) Teaching: procedure / treatment (5618)
Resuming the speech routine	(00051) Impaired Verbal Communication related to edema, characterized by inability to speak and inappropriate verbalization.	Joint motion (0206) Communication: expression (0903)*	Exercise therapy: joint mobility (224) Improved communication: speech deficit (4976)*
Containing saliva and expressing certain emotions by facial expression	(00174) Risk for Compromised Human Dignity, risk of loss of control over body functions – bucomaxillary function.	Coping (1302) Personal well-being (2002)	Improvement of coping (5230) Anticipatory guidance (5210)
Containing saliva and expressing certain emotions / Facial edema	(00153) Risk for situational low self-esteem, risk of body image disorder, lack of recognition and functional impairment.	Self-esteem (1205) Risk Detection (1908)	Anticipatory guidance (5210)
Long recovery time	(00146) Anxiety related to the changes in health status and unmet needs, characterized by the sensation of distress, anxiety, apprehension, uncertainty and worry.	Anxiety self-control (1402)	Reduction of anxiety (5820) Calming Technique (5880)
Hygiene of the post-surgical site	(00004) Risk for Infection, risk for inadequate primary defenses (alteration in skin integrity) and invasive procedures.	Tissue integrity: Skin and mucous membranes (1101) Knowledge: infection control (1807)	Teaching procedure / treatment (5618) Protection against infection (6330)*
Operative wound	(00045) Impaired oral mucous membrane related to surgery in the oral cavity, characterized by oral discomfort, difficulty eating, hyperemia and oral lesions.	Tissue integrity: Skin and mucous membranes (1101)	Restoration of oral health (1730)
Immediate postoperative pain	(00132) Acute pain related to injurious agents (nasal intubation), characterized by the positioning to ease pain and verbal report of pain.	Pain control (1605)	Pain control (1400) Administration of analgesic (2210)

* Added according to judges' suggestions after validation.

The judges' suggestions were few and were incorporated into the final version. As the proposal submitted to the judges' evaluation presented more than one proposal of outcomes and interventions, those with lower CVI were excluded. In the analysis of interventions and outcomes with CVI, it was found that such suggestions were not essential for the difficulty listed.

In the ND Impaired Verbal Communication, incorporating the NOC Communication: Expression and the NIC Communication Improvement: Speech Deficit, was suggested during the validation, which was considered appropriate since patients may present defective speech in the postoperative period due to operative trauma.

One judge suggested replacing the ND Impaired Oral Mucous Membrane with the diagnosis Impaired Tissue Integrity due to its correlation with the proposed outcome. The first selection was maintained after having verified the definitions, defining characteristics and related factors. Adding the NIC Care of Injuries and Infection Protection was suggested by two judges. After analysis of the definitions and activities, it was concluded that the interventions could be effective in this group of patients, and thus they were subsequently added to the validation.

The ND Imbalanced Nutrition: Less than Body Requirements appeared on the initial list; however, configured only as a risk in the study patients. As there is no

diagnosis for the risk, inclusion of the ND Feeding Self-care Deficit related to discomfort and pain was suggested.

Two new diagnoses were also suggested: Ineffective Protection and Risk of Aspiration, but not included in this study as they were not related to the health state nor the difficulties presented by the studied patients.

DISCUSSION

Among the diagnoses resulting from the validation, five (55.5%) were classified in the psychosocial level, and four (44.5%) in the psychobiological level due to the verified need⁽¹¹⁾. The ND Ineffective Health Management, Deficient Knowledge, Impaired Verbal Communication, Risk for Compromised Human Dignity, Risk for Situational Low Self-esteem and Anxiety were classified as psychosocial, while the rest as psychobiological. This fact deserves attention, since despite being an invasive surgery, the emotional factor is of paramount importance.

The ND found in this study and their respective NO and NI according to NANDA-I, NOC and NIC are amenable to implementation in the nursing process.

Maintenance of the elastics to stabilize the jaw and the post-surgical diet have led to the ND Ineffective Health Management, demonstrating that follow-up of these patients during recovery is necessary, considering that if there are no interventions, treatment abandonment or weight loss may

occur in the long-term due to lack of motivation regarding the recommended intake of liquid or pasty foods, further prolonging the recovery period.

In order to maintain Effective Management, patients may need assistance from family members to not only perform tasks, but also for motivation.

The nursing intervention Teaching the Procedure to these patients is to guide them on the use of the orthodontic elastics and their handling during the postoperative period. In an American study, the nursing orientations provided by the nurse to the patient and their caregivers reinforced elastic handling and an adequate diet to avoid malnutrition with foods that are blended, as well as oral intake of liquids⁽¹⁾.

A study on the health education to patients in the postoperative period of thoracic and abdominal surgery performed with patients and their family members using graphic materials with health information for the patient to follow in the home environment concluded that the patients receiving the guidelines became more confident, calm and reported improvement in their health⁽¹⁵⁾.

The presence of a companion may also be necessary in the preoperative period in order to receive the guidelines and thus offer support to the patient because of their emotional state. It is important that the intervention related to ND Deficient Knowledge is also extended to the patient's companion//caregiver in the preoperative period.

This guidance can be carried out at the outpatient clinic. A study on preoperative guidance by the multiprofessional team to patients undergoing cardiac surgery compared preoperative anxiety levels before and after their orientation, and in the outcomes showed a significant reduction ($p = 0.020$) in anxiety levels after orientation⁽¹⁶⁾.

However, patients feel anxious about the surgery and are not able to receive and process the information received in the preoperative period. The long time between the return visits to the doctor and the lack of educational materials for consultation are directly related to this diagnosis. By evaluating the nursing outcomes on patients' orientation submitted to preoperative cardiac surgery, a descriptive study interviewed patients in the postoperative period and was able to confirm that they received adequate information, understood physical care, technical procedures, received emotional support and the theoretical background⁽¹⁷⁾.

In addition to guidance on the surgical procedure, an intervention applied to surgical patients in the United States has been shown to be effective in reducing anxiety. Massage was applied to the hands of surgical patients awaiting for the surgical procedure, and the results showed reduced anxiety levels in these patients when compared to patients receiving the usual nursing care⁽¹⁸⁾.

Another fact that was highly emphasized by the patients was the occurrence and long duration of edema and paresis. Edema is directly related to the patient's self-image, as face configuration changes during this process depending on its severity. These factors motivate several diagnoses; the most of which are of a psychosocial nature, directly relating to body image and interpersonal relationships, considering that aesthetics is one of the reasons for considering surgery⁽⁴⁾.

In a pilot test, an educational intervention handout to patients submitted to orthognathic surgery resulted in lower levels of anxiety, less difficulty in performing oral hygiene and management of mild/moderate pain after the intervention. The knowledge assessment showed that the applied instrument was not adequate, being composed of easy questions; however, the intervention proved to be consistent⁽¹⁹⁾.

Anxiety is a constant in patients and it tends to increase when considering paresthesia, leading to the ND of Risk for Compromised Human Dignity and Risk for Low Situational Self-esteem. This lack of control over bucomaxillary functions causes feelings of shame, which can lead the individual to social isolation when no intervention is implemented.

The nursing intervention Improvement of coping for surgical patients allows for assisting the patient in adapting to stressors, changes and threats perceived during the postoperative period. Also, the NIC Anticipatory Guidance was based on information to keep the head elevated during the anesthetic recovery period, applying ice packs to manage edema and keeping the head elevated during sleep in the postoperative period at home⁽¹⁾.

In addition to expressing emotions and containing saliva, the loss of control over the functions also related to Impaired Verbal Communication, producing faulty speech. New means of communication can be sought through this intervention during the period in which the function is impaired.

In the Anticipatory Guidance on exercises for intraoral sensitivity and proprioception, it is possible to recommend tactile, thermal and gustatory exploration, thus taking into account knowledge of the new facial structures. Guidelines on performing postoperative facial exercises may help the patient in better coping with their temporary condition⁽²⁰⁾.

After surgery, patients may experience lesions on the oral mucosa, which characterize the ND Impaired Oral Mucous Membrane. These lesions may constitute a Risk of Infection due to the ruptured primary barriers. Also regarding the risk of infection, it is important to highlight the difficulty presented by patients regarding oral hygiene. The diagnosis Risk of Infection, its interventions and outcomes obtained 100% agreement in the validation between the judges, which confirms the importance of this ND for surgical patients in general.

In a cross-sectional study on nursing activities during anesthetic recovery, some nursing interventions were identified during the care, among them being: infection control with antibiotics administration, care of lesions, positioning the patient in order to avoid tension on the injury and environment control – comfort, and facilitating it with a clean and comfortable bed⁽²¹⁾.

The nursing intervention Restoration of Oral Mucosa can be applied in the preoperative Anticipatory Guidance and reinforced during the discharge orientation, stressing care for oral hygiene with a soft brush, oral antiseptics and the use of lip moisturizer/balm during the postoperative period to avoid oral lesions⁽²²⁾.

Replacing the ND Imbalanced Nutrition: Less than Body Requirements with the ND Feeding Self-care Deficit related to discomfort and pain was relevant, given

its definition: "characterized by an inability to swallow food, inability to eat food in a socially acceptable manner and inability to move food in the mouth". The intervention and the expected outcomes for the removed ND could be maintained, given the basic human need affected, which gives rise to both diagnoses and nutrition⁽²³⁾. If Ineffective Self-control of Health exists and remains for an extended period without any intervention, unbalanced nutrition may occur.

Anticipatory Guidance for a balanced diet that is suitable for the postoperative phases can be applied to patients submitted to orthognathic surgery. Adequacy of a balanced diet initially consisting of liquids, then pasty, soft foods and finally solid foods, all with nutritious choices, ensures nutritional need and assists in postoperative recovery⁽²²⁾.

The limitations of this study refer to the population, consisting of a focal group composed of a small group of patients from a single private practice and the absence of

similar studies with this population in order to compare the obtained data.

CONCLUSION

The identified and validated ND, NO and NI allow nurses to predetermine the focus of care during the perioperative period, which decreases the chances of undesirable events in the care of these patients and may provide greater patient safety. Moreover, the protocol presented synthesized ND and respective NO and NI common in patients submitted to orthognathic surgery, which does not exclude the possibility of inserting other ND specific to each patient.

Most of the proposed nursing interventions are related to teaching the patient, since the hospitalization period is brief and their recovery at home is long. In implementing such interventions, patients may experience a safe and quiet recovery, as they will be better able to self-care.

RESUMO

Objetivo: Propor diagnósticos, resultados e intervenções de enfermagem em pacientes em pós-operatório de cirurgia ortognática. **Método:** Análise secundária de um banco de informações de um grupo focal com cinco pacientes submetidos à cirurgia ortognática. Para elaboração dos diagnósticos, resultados e intervenções de enfermagem, utilizou-se das classificações da *North American Nursing Diagnosis Association International*, *Nursing Outcomes Classification* e *Nursing Interventions Classification*. A partir da transcrição do grupo focal, foram identificados os diagnósticos de enfermagem e propostos resultados esperados e intervenções. Em segunda etapa, o material foi submetido à análise por juízes para validação da etapa anterior. **Resultados:** Após análise cuidadosa das informações recuperadas, foram identificados nove diagnósticos de enfermagem que se relacionam tanto com as dificuldades já instaladas como com as dificuldades potenciais do paciente. Após esta fase, foram identificados os resultados esperados da assistência de enfermagem e as intervenções adequadas para um pós-operatório em domicílio. **Conclusão:** Dada a curta permanência hospitalar e um pós-operatório longo, as ações estabelecidas têm forte enfoque educacional.

DESCRITORES

Cirurgia Ortognática; Cuidados Pós-Operatórios; Processo de Enfermagem; Enfermagem Perioperatória; Diagnóstico de Enfermagem.

RESUMEN

Objetivo: Proponer diagnósticos, resultados e intervenciones de enfermería para pacientes en posoperatorio de cirugía ortognática. **Método:** Análisis secundario de un banco de informaciones de un grupo focal con cinco pacientes sometidos a la cirugía ortognática. Para elaboración de los diagnósticos, resultados e intervenciones de enfermería, se utilizaron las clasificaciones de la *North American Nursing Diagnosis Association International*, *Nursing Outcomes Classification* y *Nursing Interventions Classification*. Desde la transcripción del grupo focal, fueron identificados los diagnósticos de enfermería y propuestos resultados esperados e intervenciones. En segunda etapa, el material fue sometido al análisis por jueces para validación de la etapa anterior. **Resultados:** Tras un análisis cuidadoso de las informaciones recuperadas, fueron identificados nueve diagnósticos de enfermería que se relacionan tanto con las dificultades ya instaladas como con las dificultades potenciales del paciente. Luego de esa fase, fueron identificados los resultados esperados de la asistencia de enfermería y las intervenciones adecuadas para un posoperatorio en domicilio. **Conclusión:** Dada la corta permanencia hospitalaria y un posoperatorio largo, las acciones establecidas tienen fuerte enfoque educativo.

DESCRIPTORES

Cirugía Ortognática; Cuidados Posoperatorios; Proceso de Enfermería; Enfermería Perioperatoria; Diagnóstico de Enfermería.

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Financial support

Conselho Nacional de Ciência e Tecnologia (CNPq), Scientific Initiation Scholarship.



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