

A Teaching Tool for a Nursing Procedure with Nasogastric Tube

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Abstract: Feeding by means of nasogastric tube is an alternative feeding method that is applied to patients who are unable to perform the normal swallowing process. The current paper presents an original educational instrument which purpose is that of empowering patients and caregivers in self-providing/providing health care assistance. It consists in a set of pictograms that complement the clinical nursing procedure on nasogastric tube feeding. Specifically, the instrument aims at explaining to the patient and to their informal caregivers, through pictograms, the proper procedure to manage adequate nasogastric feeding in the context of home care.

Keywords: Nasogastric feeding; Patient education; Informal caregiver; Pictograms.

I. Introduction

One critical intervention in nursing practice is that of assuring that the nutrition needs of patients with clinically compromised gastrointestinal function are adequately met. Difficulties as to oral ingestion of the necessary protein and caloric values are mostly due to illnesses that affect the oral cavity, the oropharyngeal region or the oesophagus. The most frequent pathologies that require gastric feeding are normally associated with prolonged anorexia, traumatic brain injury, severe protein-calorie malnutrition, coma states, hepatic insufficiency, or serious lesions likely to cause metabolic stress (e.g., burns), all of which make it difficult or impossible to ingest food orally [1]. The conditions mentioned can also be associated with decreased appetite, difficulty in swallowing, or be the result of surgical procedures that interfere directly with oral feeding [2, 3]. In such specific situations, feeding should be carried out with the aid of a nasogastric tube, a tube that is inserted through the nasopharyngeal cavity and into the stomach [4].

When it comes to providing health care assistance, home care is a strategy that has been increasingly gaining support [5, 6], in that one's home is a privileged space for caring, putting a premium on the integrity and singularity of the human being, valuing intersubjectivity and characterised by the relational aspect and respect towards the *Other* [7]. In the past, home care was essentially resorted to when dealing with patients with infectious and contagious diseases [6]; currently, however, one's home is valued as a space that provides favourable conditions to recovery and improvement in quality of life in differentiated clinical situations. The successful recovery of patients in home care is dependent on prepared/qualified people that are able to assist them and provide to them the necessary care. Caregivers can be formal caregivers, i.e., health practitioners, or informal caregivers, such as relatives, neighbours, *Others* [8].

As in any other nursing procedure, feeding by means of a nasogastric tube is subject to several clinical complications. It being the case, it is necessary to assure that the responsible informal caregiver, as second order patient [9], is taught the procedure, so as to promote a higher efficacy in carrying out the procedure, and thus minimise likely complications. In that context, it is important to make quality teaching programs available that promote a safe administration of procedures to the patient – a practice that, at the same time, boosts both patient and caregivers' empowerment for autonomously managing the particular health care provided [10, 11] in home care context. Informal caregivers need therefore to acquire specific knowledge on dietary administration, on the best positions to avoid subsequent complications, and, naturally, on how to adjust the tube and how to assess the skin around the area where the device is to be inserted. That results not only in an improvement as to the patient's nutritional condition, as it also assures comfort and safety when the care is provided, reducing both patient and caregivers' anxiety concerning the therapeutic procedures. It therefore makes it possible to minimise the risk of complications associated with nasogastric feeding and, in so doing, it also contributes to the Humanisation of health care and nursing assistance [12]. It is pertinent to set up a team of health care professionals capable of responding to the patient's needs, as well as of recognising, preventing and treating associated complications. Being able to clarify any information on the clinical procedure is important so that patients and caregivers are able to acknowledge the patient's condition and to understand his/her need for

nutrition therapy [12]. Based on the literature reviewed, we underline the pertinence that involves the challenges of *relational communication* in health care contexts, specifically, in emergency contexts, namely when there are notable differences at linguistic and cultural level [13]. In order to overcome communication barriers, we found it necessary to develop a teaching tool [14, 15, 16] supported in pictograms, as a means to facilitate informal caregiver's acquisition of knowledge on autonomous provision of health care in home care context, specifically, on the feeding of patients using a nasogastric tube.

Pictograms are graphic symbols used to convey specific information of universal character, regardless of the observer's intellectual ability or technical knowledge [17]. The use of pictograms allows us to convey visual messages aimed at explaining a procedure, and at alerting to risks that can be avoided. Its main characteristics are focused on the recognition of its universality, semantic density and graphic concision; pictograms attempt to transmit the maximum amount of information with the minimum amount of pictorial elements [18]. One of the goals of the current paper is to present a Health Education instrument developed around original pictograms. Its purpose is that of explaining/teaching to patients and informal caregivers, via pictorial elements, the correct procedure they are to follow in order to achieve an adequate dietary regime, as well as to alert those complications that may occur when performing nasogastric feeding. The choice of such alternative teaching tool is justified by the fact that pictograms, as auxiliary instruments for teaching patients and informal caregivers, constitute an effective means of circumventing individual constraints, such as literacy level, familiarity with the images, and interpretation and perception of that which is being pictorially represented [19].

II. Methodological Procedures

Following Dias, Simões, Carreira and Diogo (2014), Patient Education is based on a set of learning activities aimed at improving patients' salutogenic behaviours and their overall health condition, being an integral part of any re-empowering task [20]. To be able to act as health educator is one of the fundamental responsibilities of a nurse – a role in which his/her ability to communicate is to be emphasized as a means to promote health through learning strategies adapted to patients and their informal caregivers. The instrument here presented is specifically targeted to informal caregivers of patients with nasogastric tube, so that they can acquire autonomous ability to provide in home health care. For this purpose, we developed a set of pictograms, complemented with a small auxiliary description, on nasogastric feeding. The images, originally conceived in simple and coloured lines, attempt to facilitate the patient's understanding, as well as to effectively capture the informal caregivers' attention. It should be noted that informal caregivers, for whom this learning tool was primarily conceived, do not have to possess specific technical or professional knowledge; they have but to follow basic hygiene norms and the rules inherent to the procedure itself, and be able to identify those complications that require the intervention of a qualified professional. Due to their universal character, pictograms make it possible to convey specific messages that, allied to the simplistic pictorial nature, contribute to make the learning tool an appealing and understandable vehicle to teach informal caregivers as second order patients [9].

III. Instrument Presentation

Nasogastric intubation consists in the introduction of a tube through the nose, past the nasopharynx and into the stomach [21, 22]. As a means of nutrition support, it makes it possible to supply adequate nutrients to the patient, thus providing him/her with a suitable diet and keeping his/her hydroelectrolytic balance, nutritional condition and the motility of his/her gastrointestinal tract [22]. There are two ways in which feeding can be supplemented: (i) via *bolus*, either by syringe or perfusion, making it possible to introduce discrete amounts of solution into the patient's organism at intervals, allowing for several feeding moments throughout the day; (ii) via intermittent or continuous *drip*, where the solution runs continuously, at a slow pace, by the action of an infusion pump, according to the schedule that most benefits the needs of the patient [4]. Feeding solutions vary, from puréed normal foods, to commercially available preparations with differing levels of osmolarity, fat, proteins, lactose, or elementary formulas, which absorption does not require digestive process. Some feeding solutions are specifically conceived in accordance with particular illnesses, such as renal, hepatic or respiratory insufficiency [4].

The introduction of a nasogastric tube is prescribed by a doctor and usually performed by a nurse, and the administration of the feed is carried out by the nurse. Once the clinical procedure has been taught to the patient and/or respective informal caregiver, feeding can also be performed by them [2, 4]. The pictograms presented below illustrate how one should proceed in order to adequately perform nasogastric feeding by means of a tube. Each pictogram is accompanied by a short description, so as to further facilitate its understanding. Moving now into the technical description, the first noteworthy aspect is that of stressing basic hygiene measures. Prior to the execution of any nursing procedure, hands have to be washed hygienically using water and soap – a first elementary step that can be further supplemented with an alcohol-based solution for a more

effective cleaning. Washing one's hand is essential for removing all visible dirt and all transient microorganisms. Once hand hygiene is concluded, the patient/caregiver should attend to the selection of the pertinent material.



Figure 1: Material and equipment.

The pictogram seen in Figure 1 shows the clinical material required to administer food through a gastric tube: (i) one *syringe*, to be adjusted to the tube and which purpose is that of administering the food; (ii) one *stethoscope*, used to check the position of the tube via auscultation; (iii) *disposable guard/bib/napkin*, to keep the patient from getting him/herself dirty during feeding; (iv) *tissues*, for nasal hygiene; (v) *feed*, that varies according to the feeding administration technique – (a) *bolus* administration, where the feed is a liquid based preparation, ready to be administered through the tube; (b) *continuous drip* administration, where the feed is a pharmaceutical preparation, supplied via a system similar to that of a *saline drip*; (vi) a *glass of water*, that the patient is to drink at the end of each meal, so as to wash the tube and avoid its obstruction. In those cases where feeding proceeds by drip (either continuously or intermittently) it is necessary to set up a *feeding system* similar to that of a *saline administration apparatus*.



Figure 2: Essential pre-feeding care and securing the position of the tube.

The pictogram above (Fig. 2) exemplifies which steps to follow in order to check the position of the tube: (2a) whenever his/her clinical condition permits it, the patient should be in a fowler or semi-fowler position (seated at a 30 to 45 degree angle); (2b) check whether the tube is well fixed to the nose wing with adhesive tape, examining the integrity of the skin and possible presence of lesions; (2c) confirm the position of the tube – the most commonly used method is auscultation, consisting in the introduction of circa 20 cc of air into the patient's stomach using the syringe and then listening to a gurgling sound in the epigastric region; (2d) aspirate the gastric content before introducing any food, checking for possible gastric stasis, i.e., presence of

previously administered food. Should the aspirated content be higher than 50%, it should be re-inserted into the patient's stomach and wait one to two hours before administering a new feed.

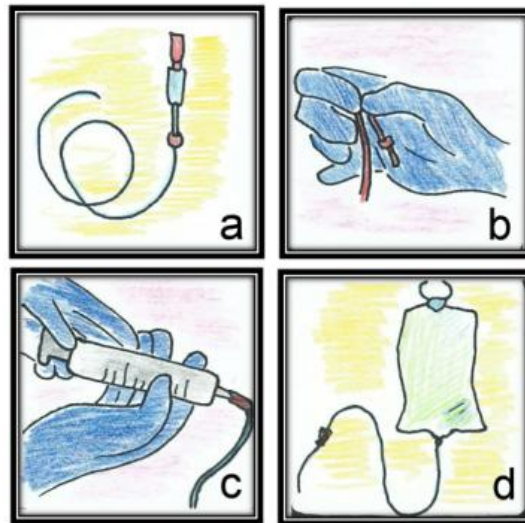


Figure 3: Adaption of the tube to the syringe and the feeding system.

The pictogram in Figure 3 shows how to adjust the tube to the syringe, or to the feeding system: (3a) image of the tube cap (it is important that the tube is closed to avoid air getting in or gastric content coming out); (3b) clamp the tube, bending it, and only then remove the cap (avoid air entry that may cause abdominal distension, with resulting ill-disposition and pain to the patient, and prevent the exit of gastric content); (3c) when *bolus* feeding, the tube is to be adjusted to a syringe (the tube should only be released, or de-clamped, after adjusting the syringe); (3d) when *drip* feeding, the tube is to be adjusted to a *feeding system* similar to a *saline drip apparatus*.

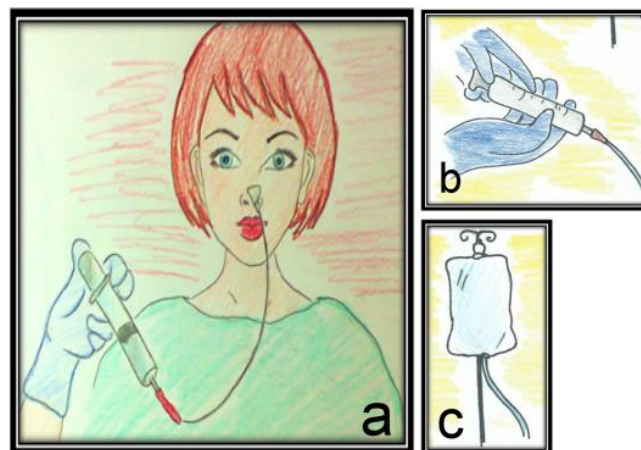


Figure 4: Nasogastric feeding by means of tube.

In Figure 4, the pictogram shows how the feeding proceeds: (4a) the feed is to be administered slowly, whichever the feeding technique used – *bolus* (4b) or *drip* (4c). The patient should be seated whenever his/her clinical condition so permits it. At the end of each meal, water should be administered, so as to clean the tube and avoid accumulation of food residues in its walls.

When teaching, with recourse to pictograms, the approach that informal caregivers should follow before patients with nasogastric tube, the learning contents to cover can be divided into three separate moments. *Firstly*, and considering that the proposed learning instrument targets informal caregivers, the nurse may begin to explain the technique, referencing the need to use the nasogastric tube, and the complications that may occur during feeding, as well as essential maintenance care concerning the material and equipment. The nurse will explain the procedure with the aid of visual elements, so as to facilitate the informal caregiver learning process. At a *second* stage, which begins only after ensuring that the teachings conveyed were successfully acquired, the informal caregiver may be asked to demonstrate what s/he has learned. At this point, the informal caregiver,

with the help of the nurse, is to show that s/he is capable of feeding the patient by means of a nasogastric tube, and to demonstrate the abilities and knowledge acquired during phase 1. The nurse should accompany the informal caregiver during this process, until s/he is certain that the informal caregiver is capable of performing the procedure unaided. *Lastly*, the nurse's role will essentially be one of monitoring the application of the procedure by the informal caregiver.

IV. Final Considerations

The act of teaching should be supported by *relational and pedagogic communication*, so as to be intelligible by all parties involved. For this reason, the development of pictograms as a teaching tool becomes indispensable to the informal caregivers' empowerment. The option for including pictograms in a learning tool developed for teaching informal caregivers is advantageous; the pictograms' pictorial and universal character facilitates relational and pedagogic communication regardless of the informal caregivers' psychosocial profile (culture, age, gender, among others). The disadvantages of this kind of pedagogic act can be related to the informal caregivers' (in)ability to apply the knowledge learned in home context. Difficulties can also arise from the impossibility of having a nurse present at all times. In order to circumvent that, the nurse should hand out to the informal caregivers images of the pictograms used in the learning sessions, in the form of information leaflets or in that of portable flash cards, so that the informal caregivers can take them to the patient's home.

Throughout the learning moment, the nurse should be able to later assess the informal caregivers' motivation and ability concerning the care they are to provide to patients with nasogastric tube. It is also important that the nurse is able to confirm whether the teachings conveyed were indeed acquired and whether the information and knowledge learned by the informal caregivers match the message that the nurse intended to pass along. Theoretically acknowledging the importance of health education and the use of learning tools that aid in establishing a relational and pedagogic communication between health practitioners and patients, we leave it open the possibility of improving, in the future, the pictorial contents presented in the current paper in pictogram format and their application in a clinical-practical context.

Health care assistance provided in home context is a strategy that is becoming indispensable, not only because it lowers hospital costs (by reducing the number of iatrogenic complications cases and, consequently, the number of hospital re-admissions) but also in that it increments the participation and involvement of families in the care provided to the patient. Considering the specificities of nasogastric feeding, we should note that some difficulties may occur concerning the informal caregivers' performance; such difficulties can be overcome through support and pedagogic intervention supplied by a nurse (formal caregiver) as well as through monitoring the correct administration of the procedure [23, 24]. To sum up, home care contributes not only to improve the results of patients' nutrition conditions, as also to assure comfort and safety, mitigating anxiety in the informal caregiver-patient pair concerning the nasogastric feeding procedure. As such, not only is it possible to minimize the risk of complications associated to nasogastric feeding, as to contribute to the humanisation of health care assistance.

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