Original Article

Educational manual for the care of patients in the post-operative period of myocardial revascularization: a tool for patients and families

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ABSTRACT

An educational manual for the self-care of revascularized patients after hospital discharge was created. It is a methodological study whose data collection occurred between February and April, 2012, with eight cardiology experts and 35 patients/families. Content and face validation were conducted with eight patients/families and eight experts. Of the proposed 46 items, patients/families rated 26 items (57%) as very important (agreement between 91.4% and 100%) and experts rated 29 items (63%) as very important (agreement equal to or over 75%). Thirty-six items, distributed in 26 categories, were selected for the final manual. There was 100% agreement between patients/families regarding content, language, and illustrations. The tool presented semantic validity and content adequacy for the population, because it was able to reduce complications resulting from lack of training for self-care, thus reducing the number of readmissions and hospital costs, in addition to systematizing post-operative teaching.

Descriptors: Myocardial Revascularization; Patient Education as Topic; Educational Technology; Nursing.

INTRODUCTION

Cardiac diseases are still some of the main causes of death worldwide, killing 17.5 million individuals annually, according to data published by the World Health Organization[(1)]. In 2012, acute myocardial infarction was the second leading cause of death, affecting 6.7 million individuals worldwide[(1)]. Moreover, cardiac diseases are frequent causes of hospitalization and cost increases in health services of both developed countries and those in development[(2-3)]. In Brazil, the profile

of patients with cardiac disease and therapeutic strategies for care and diagnosis are similar to those used in North American and European countries. However, the Brazilian population takes, on average, 128 minutes longer to seek health services when compared to the population of developed countries[4]. This partly explains the worse prognoses for Brazilian patients when compared to those who receive early attention, given that myocardial reperfusion strategies are time-dependent[5].

Brazil has more cardiac surgeries than Germany, the United Kingdom and Japan—approximately 102,000 in 2012—with a prevalence of myocardial revascularization surgery, of which 80% is conducted in the Brazilian Unified Health System (SUS, as per the Brazilian acronym)[6]. This procedure is recommended for patients with resting thoracic pain that lasts even when employing other therapeutic measures, and with extensive coronary injury presenting hemodynamic instability. After discharge, physical and emotional changes are frequently reported by patients. They involve changes in patterns and quality of sleep, fatigue, changes in respiratory patterns, thoracic pain, constipation, edema, nausea, dizziness, and anxiety[7-8]. Under these circumstances, discharge planning becomes a crucial care practice that contributes to improve these issues, as well as to improve adherence to drug therapy and the other care needs in this phase of post-operative healing.

Discharge planning is defined by the World Health Organization as a strategy for the release of patients from specialized health centers to home[9]. This strategy involves an educational process that must occur at different times of the hospitalization process in order to promote higher safety to patients and families, clear any doubts, update information, and ensure care continuity at home[10]. This process should actively involve patients and families in order to encourage them to take on responsibilities, handle limitations, and take control of their own health[11]. In this sense, it could be said that discharge planning aims to reduce barriers and difficulties in the disease and hospitalization process, as well as to conduct self-care activities[3].

Self-care is defined as individuals performing practical activities for their own benefit in order to maintain health, well-being, and development[12]. This phenomenon was mentioned for the first time in the nursing field by Orem[12], and defined based on characteristics of individuals and on the contexts in which they are according to three systems: fully compensatory; partially compensatory; and support and education. In the fully compensatory system, individuals are incapable of conducting self-care activities, necessitating nursing support. In the partially compensatory system, both nurses and individuals perform care actions; and, in the support and education system, individuals are able to perform self-care actions and learn to conduct them with help from nurses who perform the role of educators[12]. Furthermore, in the nursing field, the development of self-care happens through actions of teaching, guidance, and education that aim to maintain human life and functioning processes.

However, patients are frequently discharged and return home feeling anxious, insecure, and doubtful in relation to self-care, including doubts related to diet reeducation, physical exercises, return to work, expected symptoms post-discharge, daily routine, problems with surgical incisions, sexual practice, alcohol intake, and medication[13]. Even when facing the challenges of the surgical procedure (pain, distance from

family, invasive devices), patients feel more secure during hospitalization, because they can count on the support of health professionals[14-15]. Furthermore, the insecurity of patients and caregivers at discharge is frequently due to limited nursing teaching, which usually lacks structure and systematization[15].

In this sense, the authors emphasize the need to improve the preparation of the family-individual unit for home self-care, enabling self-care to involve fewer doubts, becoming more secure and effective. Based on this, the creation of an educational tool can be considered a support and education strategy to be employed by nurses upon which to base self-care planning and actions that lead revascularized patients to hospital discharge. The authors believe that, due to the high number of individuals affected by coronary disease and who undergo myocardial revascularization (MR) surgery, the educational manual is a potent teaching tool that helps patients and families in self-care and offers more safety during hospital discharge. Thus, fewer complications, and a decrease in follow-up, readmission rates, and hospital costs are expected for patients and health institutions.

However, although there are manuals focused on the post-operative period of surgeries in general[16], the current literature is limited regarding manuals focused on the post-operative period in myocardial revascularization. Authors of a research study that found validity for an educational manual for women's self-care post-mastectomy suggesting the construction of other didactic materials[16], because health education continues to be of interest to politicians, institutions, and professionals, given its potential to prevent disease and reduce health costs[16]. With this, the study objective was to create an educational manual for the self-care of revascularized patients and families after hospital discharge.

METHOD

A methodological research comprising the following phases:

1. Bibliographical research of revascularized patients'/families' information and cardiology experts
2. Structuring of the educational tool, based on Orem's theoretical and Pasquali's instrument creation references
3. Content and face validation of the educational tool

In the first phase, bibliographical research was conducted through an integrative review of articles published on the portal PubMed. The English terms "coronary arterial bypass", "patient education as a topic," and "patient discharge" were employed. Included articles were those available in full and in Portuguese, English, or Spanish, published between 2008 and 2012, addressing the question: "What frequent educational guidelines on self-care are addressed in the post-operative period of myocardial revascularization surgery?" Works including children and adolescents in samples were excluded, along with research on animals. Thus, seven articles were selected and used to guide construction of the instrument.

An initial instrument was constructed from hospital guideline themes found in the literature. It comprised 46 items and 10 categories. Each item was assessed by patients and, afterward, by experts who graded their degree of importance for self-care, according to:

1. Not important
2. Mildly important
3. Very important

In the end, three open-ended questions were included in order to collect the highest possible quantity of information from patients/families and experts. In this phase, data collection was conducted between February and April 2012, through individual interviews lasting approximately one hour for patients/families and 30 minutes for experts. Bardin's content analysis was employed for treatment of responses in three stages: pre-analysis; exploration of material; and treatment of results and interpretation[17].

In the second phase, the pilot educational manual was constructed, based on Pasquali's methodological work. Thus, the proposed criteria were followed: objectivity; simplicity; clarity; relevance; precision; variety; modality; credibility; range; and balance[18]. For items to be included, the level of agreement of patients/families should be above 90% and of experts equal or above 75% for the category "very important." Those agreement percentages were chosen due to the small number of experts and the risk of excluding items relevant for the construction of the manual. Thus, items were grouped into 10 categories:

1. Use of medication
2. Signs and symptoms you must recognize
3. Post-operative wound care
4. Pain relief
5. Feeding
6. Consumption of alcoholic beverages and smoking control
7. Changes in sleep patterns
8. Activities
9. Returning to work
10. Depression and emotional changes

In the third phase, which also happened between February and April, 2012, there was a semantic assessment to analyze comprehension, relevance, and adequacy of content for the target demographic. Instructions and illustrations were included in the assessment of the pilot manual. Thus, there were assessments for illustrations, theoretical aspects (content analysis) and language (face analysis), with categories three and four assessed only for language and content, while the other categories were assessed for all three aspects. An instrument based on the model employed by Luz and collaborators[19] was created for those analyses, with the addition of questions for objective analysis of self-care in the "content" field in each category of the instrument. Finally, the pilot educational manual was assessed according to its format, size, and presentation, with the possibility for commentary and suggestions.

The subjects of the study were patients who were between the third and eighth day after MR surgery and/or their families, over the age of 18, in walking condition, and capable of performing minimal self-care

activities, with apparently preserved cognitive capacities, and either literate or illiterate accompanied by a literate family member. However, patients with prior MR clinical history were excluded. Participants were chosen based on non-probabilistic intentional sampling. Thus, the sample for the first phase (item selection for construction of the pilot educational manual) comprised 35 patients/families and, for the third phase (assessment of pilot educational manual), comprised eight patients/families.

The expert committee comprised eight professionals with experience in the cardiac surgery post-operative period, among which there were: one clinical cardiologist; one cardiac surgeon; three nurses; one physical therapist; one nutritionist; one clinical pharmacist; and one psychologist. The higher number of nurses was due to the importance of these professionals in guiding hospital discharge, with professionals chosen according to their knowledge and prior experience with cardiomyopathy patients. The professional categories were determined with the aim of obtaining a comprehensive educational manual with multi-professional guidelines.

In order to construct a manual that was interesting and easily understood, illustrations (pictures, drawings, and figures) were added. They were selected from free-access electronic pages found on Google Images (https://www.google.com.br/imghp?hl=pt-BR&tab=wi&authuser=0) and modified with the software Pages 2009 (version 4.3/1048, Apple Inc., 2012). After collection, data were organized in tables with the software Numbers 2009 and Microsoft Excel. For descriptive analyses, the software Statistical Package for Social Sciences (SPSS–Version 15) was employed.

Research met the standards set by Resolution No. 196/96, under ruling 85.122. Moreover, research was authorized by the Ethics Committee for Research Projects Analysis (CAPPesq) of the Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo (Clinical Hospital of the Medicine College of the University of São Paulo) and of the Nursing Coordination of the Heart Institution (Coordenação de Enfermagem do Instituto do Coração) of the above-mentioned University. It is worth mentioning that participants who accepted to take part in research formalized their consent by signing Free and Informed consent forms.

RESULTS

In the literature review, 37 themes were found to address hospital discharge of patients who underwent myocardial revascularization (Table 1).

From those themes, 46 items were initially proposed. Patients/families rated 26 items (57%) as “very important,” with between 91.4% and 100% agreement between subjects and this rating. Items with 100% agreement were: advise the following of special diet; teach what signs and symptoms must be observed in case of infection of post-operative wounds; recommend home cleanliness and safety; indicate actions that must be performed if patients feel ill at home; explain what medication will be used; teach about drug interaction; and highlight the main problems encountered when using medication (side effects).

Table 1: Description of themes found and their frequency in literature. São Paulo, São Paulo, Brazil, 2012.

Item	Theme (Frequency)	%	Item	Theme (Frequency)	%
1	Early walking	62.5%	20	Medication use	25%
2	Pain control	62.5%	21	Side-effects of medication	25%
3	Offer of emotional support	62.5%	22	Patients with feelings of vulnerability	25%
4	Maintenance of physical conditioning	50%	23	Guidelines for coughing	12.5%
5	Physical exercise	50%	24	Liquids restriction	12.5%
6	Symptoms of sadness and depression	50%	25	Changes in sleep patterns	12.5%
7	Fatigue management	37.5%	26	Abdominal pain	12.5%
8	Use of stairs	37.5%	27	Control of urinary output	12.5%
9	Signs of cicatrization of post-operative wound	37.5%	28	Abdominal distension	12.5%
10	Constipation	37.5%	29	Diarrhea	12.5%
11	Anxiety management	37.5%	30	Medical follow-ups	12.5%
12	Changes in heartbeat patterns	25%	31	Use of antiplatelet drugs	12.5%
13	Deep breathing guidelines	25%	32	Use of hypolipidemic agents	12.5%
14	Weight control/Weight loss	25%	33	Use of diuretics	12.5%
15	Cleaning of post-operative wound	25%	34	Goal of medication	12.5%
16	Symptoms of pain or tingling in upper limbs	25%	35	Guidelines for use of compression stockings	12.5%
17	Control of nausea and lack of appetite	25%	36	Inclusion of family in discharge guidance	12.5%
18	Control of laboratory exams	25%	37	Guidelines for returning to routine/social/work routines	12.5%
19	Use of anticoagulants	25%			

In the experts group, professionals chose 29 items (63%) as “very important.” Agreement between professionals for that rating was equal to or above 75%. Items with 100% agreement were: address the return to sport practice; advise the following of special diet; address consumption of alcoholic beverages; recommend care practices for open post-operative wounds; teach signs and symptoms that must be observed in case of infection of post-operative wounds; teach actions that must be taken if patients feel ill at home; address medical follow-ups; highlight the risks of smoking; and recommend alternatives for quitting smoking.

Data obtained from analyses of the patient/family group and the experts’ group were associated in order to construct the pilot educational manual. Thus, 36 items were chosen to be incorporated in the educational manual. Of the 36 items, 19 (53%) met the selection criteria for both groups, 10 (28%) were selected by experts, and seven (19%) were selected only by patients.

There was a predominance of 100% agreement for categories assessed by patients regarding content. Patient agreement on language and illustrations in the category “Signs and Symptoms” was 87%. In the experts’ assessment, there was 87.5% agreement for the content of categories “Feeding” and “Depression and emotional problems”; 87.5% agreement with the language of categories “Use of medication”, “Activities” and “Return to work”; and 75% agreement for the same aspect of the “Feeding” category. In the other categories, there was 100% agreement for analyzed aspects. Considering a minimum of 75% agreement, all assessed categories were kept in the manual. Thus, the final Educational Manual comprises 36 items distributed among 26 categories, according to Chart 1.

Chart 1: Items in the final version of the Educational Manual for self-care in the post-operative period of myocardial revascularization surgery. São Paulo, São Paulo, Brazil, 2012.

1.	Explain the possibility to cut, dilute, macerate medication
2.	Explain what foods must be avoided
3.	Explain medications to be used
4.	Indicate alternatives to reduce medication costs
5.	Teach actions that must be performed if patients feel ill at home
6.	Advise the following of a special diet
7.	Explain how to perform movements with support (sitting on the sofa, getting up from bed)
8.	Teach how to handle anxiety, how to communicate fears and preoccupations
9.	Explain the use of insulin, in case of need
10.	Explain signs and symptoms that must be observed in case of infection of post-operative wound
11.	Explain psychological adaptation
12.	Address consumption of alcoholic beverages
13.	Explain drug interaction
14.	Address medical follow-ups
15.	Address the return to sports practice
16.	Explain how to return to sexual activity
17.	Explain how to climb stairs
18.	Recommend the use of generic drugs
19.	Recommend post-operative wound care
20.	Warn about the dangers of smoking
21.	Talk about the return to driving
22.	Talk about the return to social activities (restaurants, movie theaters, shopping malls)
23.	Explain strategies for dressing
24.	Address the possibility for long-distance trips
25.	Teach about personal hygiene
26.	Teach about swimming in the sea or in pools
27.	Recommend the use of compression stockings
28.	Recommend alternatives for quitting smoking
29.	Relate emotional changes to the post-operative period
30.	Warn about the main issues related to medication (side effects)
31.	Explain how medication works
32.	Talk about exposure of post-operative wound to the sun
33.	Talk about the use of bandages (saline solution, gauze, gloves) at home
34.	Show how medication is working
35.	Inform about the length of effect of medication
36.	Recommend household cleanliness and safety

The full final version of the Educational Manual for Myocardial Revascularization Post-operative Care can be found at the following link: https://marques-sm.wixsite.com/manualeducativopocrm.

DISCUSSION

Self-care is described as a behavior practice performed by individuals and based on the goal of keeping and improving their health quality[7]. It demands from individuals knowledge of their health condition, which allows them to take control of it and to change risk behaviors by choosing healthier life habits[20]. In this context, education stands out as a social practice, achieved through participation, dialog, and meanings attributed by individuals[19], represented in the manual developed in this research through its structure, didactic content organization, and graphic design[20].

The educational tool was built based on information collected not only from health professionals, but

also from the target demographic, which was also employed in other studies[16,21]. For example, an investigation[16] aiming to develop an educational manual for women post-mastectomy was validated by a group of women who had had mastectomies and another of judges who specialized in the topic. In another educational manual[21], health promotion for pregnant women was based on a list of demands of the target demographic and on a literature review, as well as on the systematization of content and its validation by experts and pregnant women. Some studies[16,21] emphasize that demands and manifestations found among individuals, both in selected groups and experts in the field, contribute to the creation of educational materials, because they depict and support theoretical construction and are focused on the real needs perceived by the target population that experiences the health-disease condition.

Similarly, the experts' input is important in the creation of teaching and educational materials, because they contribute specific knowledge to the instrument and relevant information for patients. Another benefit of building tools based on the target population is the easier access to information and learning, facilitating knowledge production. Therefore, the creation of educational materials in health, although guided by the expertise and experience of professionals, must be based on the observation of knowledge demands from the population[16,21]. Based on this, the authors highlight that the target demographic of this research effectively contributed to content and face validity and to formatting the educational tool. This is because their participation enabled the strengthening of and handling of important theoretical aspects in the post-operative period of MR surgery and the presentation of content in an organized and attractive way, contributing to their effective reading. There was coherence of the information presented with that which was truly perceived as important by respondents.

On the other hand, it is known that 50% of the population in developing countries is illiterate[22], which reinforces the importance of involving families in the educational process and of structuring teaching tools. Moreover, a part of the population presents some degree of difficulties in reading and comprehending information, with families being responsible for actively participating in home care[23]. Therefore, this manual was constructed also considering the participation of families who, frequently, are the true caregivers of patients at home. It is important to emphasize that, frequently, professionals involved in hospital care cannot contribute guidance focused on patients' needs in the post-discharge period[22]. In this context, families can also benefit from tools that strategically address guidelines relevant for discharge and that are useful in supporting patient care at home. Therefore, the inclusion of families in this research also contributes to content and semantic validity, as well as the formation and construction of an educational tool. Their participation contributed to the final material's being easily understood and, at the same time, including information that they considered necessary for care. Thus, it is hoped that families will be able to interpret and utilize information in the manual to support patients in the post-operative period of MR surgery.

The written material facilitates the educational process, because it enables readers to overcome comprehension difficulties through decoding information and rememorization of content[23-24]. This was verified in a systematic review with patients under medication treatment[24], which verified that patients and

families prefer written information to help their decision-making at home. However, although written communication is a crucial tool to disseminate good health practices, there are aspects related to language, illustrations, and layout that must be considered when creating printed educational materials, with the aim of making them easily comprehensible, legible, and relevant[23-24]. Thus, materials with colored illustrations are preferred instead of bi-colored (black and white), because the latter do not stimulate attention and interest in readers[21-22]. Thus, it is suggested that written materials, created to attract the attention of the target demographic, must be informative and persuasive, aiming for changes in behavior, depicting themes that are important for health. Therefore, language clarity becomes crucial for the dissemination of information, considering that, in written materials, readers are alone with their interpretation. Thus, technical-scientific, ambiguous, and exclusively popular languages harm the interpretation of information and contribute to the appearance of doubts[15].

Additional psychological and social support resources were added (electronic addresses, telephone contacts, and referenced health services) to the printed educational tool as a way to enable the search for new information, thus further supporting patients and families in understanding and performing self-care[7-8]. In that regard, it is evident that the use of educational resources for self-care is associated with increased levels of knowledge for the identification of health problems, for self-service, and for the performance of behavioral actions that reduce the incidence of physical and emotional symptoms[15]. Therefore, the development of the individuals' and families' capacities for these skills in the post-operative phase of MR surgery, contribute to increase quality of life and diminish the incidence of secondary cardiovascular complications.

CONCLUSION

The construction, content, and semantic validation of this tool focused on a specific sample of the population and was considered satisfactory. It can be used to optimize discharge planning by health professionals and to support patients and families in post-discharge care at home. This will reduce the rate of patients returning with clinical complications resulting from incorrect medication use, handling of post-operative wound care, and lack of knowledge of the rehabilitation process in general. Therefore, the use of this instrument in practice will enable a safer myocardial revascularization post-operative period, with lower risks of complications at home resulting from lack of preparation for self-care, decreasing rehospitalization and hospital costs, in addition to standardizing nursing training.

Moreover, when the post-operative period is guided specifically toward discharge and based on characteristics of a specific population, it enables a higher approximation between patients/families and self-care. This reduces the barriers of empiric and depersonalized guidelines, strengthening focus on strategies that are interesting for the patient-family unit and increases safety, ease, and trust in the performance of care.

The limitation of this study was its specificity to patients in the post-operative period of myocardial

revascularization surgery, not applying to other surgical procedures. Therefore, the authors suggest that other tools be developed for other populations that demand post-operative care at home.

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