The bone care nurse project

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Summary

In today's society, citizens are called to play an increasingly active role in decision planning related to the various aspects of work, social and political life. This trend has been also confirmed in the health's field. In fact, the citizen is also required to have the skills to take responsibility for his/her own health, to have knowledge of the health care system, understand the advice and instructions of health professionals, actively participating with them in the therapeutical path. The lack or an inadequate level of these skills will affect both the health of the individual and the costs related to the National Health System. The nursing staff that interfaces between physicians and patients plays a key role in health's promotion as an important determinant of health and welfare of the patient-citizen. With regard to osteoporosis, due to better knowledge of its determining causes, it is now possible an easy access to diagnosis and treatment options before fragility fractures occur, providing a real prevention to such complications. Prevention must be addressed to two different, but related, objectives: 1) prevention of osteoporosis; and 2) prevention of fragility fractures in patients with osteoporosis. In the context of both primary and secondary prevention, the nurse can better informed the patients and/or citizens about either the risks related to an inappropriate behavior or situations and events particularly dangerous to health, as well as provide information to simply and effectively implement protective measures. This project aims to raise awareness and create competent and specialized nurse figures, with a good understanding of the bone diseases, through the organization of seminars and training courses. Thus, it will be create clinical pathways and welfare in which the figure of the "Bone Care Nurse" will be responsible for administration of questionnaires relating to lifestyle and, for patients in drug treatment, questionnaires designed to assess the relevance of the adherence/compliance to the prescribed therapy. The "Bone Care Nurse" will also provide specific information leaflets aimed at improving lifestyle, compliance and adherence to therapy prescribed by physician. Specifically, this program will cover not only the prevention of fragility fractures in patients with low bone mass but also will provide general information on healthy lifestyles, such as adequate diet and physical activity, helpful to prevent cardiovascular disease, diabetes, obesity. An increase patient's compliance in taking the antiosteoporotic therapy, as also other concomitant medications will be obtainable. The information collected will be stored in an electronic database, subject to statistical analysis and will be informative on both the degree of knowledge of disease by the patient at the first and follow-up meetings of the Bone Care Nurse project.

KEY WORDS: bone care nurse project; adherence to antiosteoporotic therapy; prevention of fragility fractures; patients education.

Introduction

In today's society, citizens are called to play an increasingly active role in decision planning related to the various aspects of work, social and political life. This trend has been also confirmed in the health's field, in which to have a good "Health's Literacy" means to have the skills to take responsibility about own health, the ability to provide basic care, the knowledge of the health's care system, understanding the advice and the instructions of health's professionals, interactively participating to the process of therapy. The lack or an inadequate level of these skills will affect the quality of the health's providers as also the costs of related to National Health System expenses (1).
The nursing staff plays a vital role in health's promotion as an important determinant of both health and welfare of the patient-citizen. Osteoporosis (OP) is a metabolic skeletal disorder characterized by a quantitative reduction in bone mass and altered bone quality with a consequent increase in bone fragility and susceptibility to fractures. Given the increase in the average of life's expectancy, particularly in economically advantaged Countries like Italy, OP has been becoming a significant clinical problem that will increase in the next generations. So, OP is a current significant social and medical problem, especially in the elderly population (2). Osteoporotic fractures mainly affect the spine and the hip, less frequently the wrist, pelvis, and proximal humerus. All these fractures are associated with a significant morbidity, but the hip and spine fractures are also associated with an increased mortality, with an incidence of around 24% in the first year after a hip fracture. In addition, these fractures cause significant problems in terms of economic resources. In most European Countries, the annual costs associated with hospitalization for fractures (in terms of length of the hospitalization) were higher than those due to other chronic illnesses such as chronic obstructive bronchial pulmonary disease, stroke, myocardial infarct (3). Due to a better understanding of the causes, an easy access to diagnosis and therapeutical options, before fractures occur, is now possible providing a real prevention to OP and its related complications.

The levels of prevention

Within the various levels of prevention, the nurse assumes a fundamental role for a good information of patient-citizens about the risks related to patient behavior or the existence of inappropriate situations and events particularly dangerous to health, as well as he/she will provide information to implement simple and effective protective measures.
The prevention of skeletal fragility and fractures, typical of OP, can be done at three levels:·1) Primary level: it includes all measures taken in the general population to be analyzed, not considering the individual risk; 2) Secondary level: it aims to an early detection of the disease using adequate algorithms to estimate the risk of experiencing a fracture; and 3) Tertiary level: it is intended for patients who have already suffered an osteoporotic fracture and therefore have demonstrated clinical signs of skeletal fragility.
The primary prevention strategy can become effective if it will be offered to large portions of the general population. Recently, moments useful for the prevention, differentiating the ages of intervention have been defined: 1) the age of the development to optimize an adequate reaching of the peak of bone mass; 2) the age to which to maintain the reached peak of bone mass of the adult to avoid its possible losses (e.g., pregnancy, lactation, inactivity, drug use); 3) the age of maturity in order to limit the bone loss; and 4) the age of elderly to prevent fragility fractures.
Then, acting on the factors, that influence bone health at all ages, is essential to prevent OP and related fragility fractures. The key steps that should be pursued can be summarized as it follows: 1) a balanced diet rich in calcium and vitamin D; 2) the maintenance of an adequate vitamin D status; 3) a regular physical exercise in relation to body weight, following also a healthy lifestyle (e.g., no smoking or alcohol) (4).
Consequently, it is essential to perform awareness campaigns beginning in the early stages of the school life and persisting up to following decades in order to let the people understand clearly how OP can be prevented.
Secondary prevention is based on the individual subject to better identify the causes of bone fragility fractures by using instruments that measure the bone mineral density or “risk maps” that rely on the level of danger considering the clinical history and physical examination. The same rules as for primary prevention must be also applied: adequate daily calcium and vitamin D intake through diet, and regular physical exercise to increase strength and improve equilibrium are strongly recommended (5).
However, currently we have at our disposition adequate drug therapies enabling an effective prevention of fragility fractures. The patient’s compliance to the prescribed treatment, upper to 80%, represents an essential element for an ideal effectiveness of the available drugs to treat OP able to both increase bone mass and reduce fracture risk. In this regard, it is fundamental to improve the patient’s adherence to treatment of OP as a prior objective. Unfortunately, about half of patients stop medication within the first year of prescription, making it ineffective and causing a huge waste of economic resources. Therefore, it is essential to intensify efforts for the development and implementation of administrative procedures for the treatment of OP that are able to significantly improve long-term adherence to therapeutic prescriptions.
A fall prevention program should also be provided, since it may significantly contribute to decrease the chance of fracture. On the other hand, the risk of falls in older people with OP is particularly high for the concomitant presence of various factors such as defects and visual disturbances, use of drugs that reduce the response reactions (e.g., antidepressants and sedatives), disease both physically and mentally debilitating. The risk of falling can be reduced through an improved neuromuscular efficiency by promoting specific physical activity and physiokinesitherapy, but also by removing architectural barriers and environmental situations that may expose the elderly at risk of falling, especially at home (5).
Tertiary prevention of OP is aimed at patients who have already suffered a fragility fracture and is proposed to decrease the risk of further fractures. There is a huge evidence that each fracture event is associated with an increase risk of subsequent fractures, from 2 to 5 times, regardless of the presence of other risk factors. Therefore, an effective tertiary prevention is a key moment to reduce the health and social impact of fragility fractures, because it targets a population with particularly higher risk of fracture. An essential prerequisite to any drug therapy is certainly to advise a change in wrong lifestyles, such as alcohol and smoking abuse, or low physical activity, as fully described above.
In particular, personalized exercises aimed at muscle strengthening, rehabilitation of gait and improving equilibrium, to reduce, especially in the elderly, the risk of falls and injuries related to them, must be introduced (6).
However, drug therapy is essential to increase the skeletal strength. To maximize the effectiveness of drugs used, is essential an adequate daily supplementation with calcium and vitamin D and, also in this case, must be reminded the need of an adequate adherence to such a supplementation. Specific informative programs, adequate education and motivation of patients can be effective for this purpose (7).

The bone care nurse project

The Bone Care Nurse project aims primarily to raise the awareness and create competent and specialized nurse figures, having a good understanding of the metabolic bone diseases through the organization of seminars, training courses and masters, facing across the board nursing staff belonging to different clinical Departments. This will allow this figure to take part in nursing and in the implementation of optimal paths for education, diagnosis, treatment and rehabilitation of patients.
The Bone Care Nurse will personally organize and participate in educational campaigns addressed to the general population in order to spread the specific culture of prevention based on adequate lifestyles, early diagnosis, considering the appropriate use of modern diagnostic tools, and motivating a long-term compliance of patients when treatments are necessary.
In our metropolitan area there are specific meetings promoted by associations of osteoporotic patients, dedicated physicians and nurses specialized in the Metabolic Bone Diseases field, during which various issues are addressed on the prevention of bone fragility.
Another example is represented by “Mister bone” project aimed to implement a specific education in this health’s area in Florentine primary schools. The project began in 2009 with a pilot phase involving 215 children and parents of several elementary school in Florence. This year, the experience has been replicated in other schools in 211 children. Everything revolves around the Mister Bone comics, protagonist of the courses in the classroom through comic books, tests, games and DVDs (via web looking for the error crossword puzzles), children learn how the bone is done and especially what they must do to keep it in shape. Specific brochures have been, and will be, produced and distributed.
In hospital planning, the Bone Care Nurse will be part of a team for the development and implementation of the clinical care pathways to maintain vigilance on subjects clinically at risk of OP and fragility fracture. This could happen by the use, in a specialized clinics, use of ad hoc questionnaires for the assessment of: 1) average daily calcium, phosphorus and protein food intake; 2) patients’ habits of life, pointing to the risk factors favoring the development of OP (e.g., smoking, alcohol, lack or reduced physical exercise, lack or reduced sunlight exposure); 3) the adherence to the prescribed drug. The Bone Care Nurse will also provide specific informative leaflets aimed at improving lifestyles, complian-

ce and adherence to therapy prescribed by physician. Educational meetings for both patients and families can be also organized. These same questionnaires of the first visit will be administered again at follow-up visits. The collected information will be stored in a dedicated electronic database, subject to statistical analysis, and will provide information on both the degree of knowledge of disease by the patient at the first meeting and the changes following the intervention of the Bone Care Nurse.

Currently, our project has already begun, as a project for health education: One hundred patients with primary OP were selected, and two questionnaires were administered: 1) to assess the daily calcium intake through diet; 2) to assess the lifestyles and adherence to a possible drug therapy. Consequently, meetings were organized and educational brochures distributed. The same questionnaires were offered again after six months and the data analyzed.

The results confirmed the importance of educating patients about the health's determinants: in fact, the follow-up questionnaires, for all individuals involved in the study, showed that an appropriate lifestyle can play an important role in preventing OP. It was also noted, although remaining at a value lower than the one suggested by the daily requirement, an increase in the average of the daily calcium intake by food, above the baseline average. An important result was obtained by sensitizing the people involved on the need of physical exercise, especially those subjects who have risen to walk in the open air activities, which allow them to spend more time outside and therefore with a prolonged sunlight exposure.

Another important fact relies to the prevention of the risks to falls. In fact, a particular sensitivity to this issue was found, perhaps due to the fact that safety in the home environment is an issue that affects also close family members, children for example. With regard to therapy compliance, the follow-up questionnaires revealed that a greater number of patients took the drug assumption on more regular basis and according to the procedures outlined by their own health's care provider. These data have to be further detailed and could be complemented with additional checks after some time.

Within a multidisciplinary team, the nursing figure could play a key role for the patient who has already suffered a fragility fracture. First, with regard to functional recovery after surgery, he/she will be important to the process of de-hospitalization and the correct use of child-care facilities located in the area, so as to identify measures that could prevent or delay disability and long-term care (7). For this type of user, it would be desirable to adopt a new organizational model, proposed to provide advanced solutions to the health needs of the growing number of senior citizens who are having a hospitalization due to fragility fracture.

Building upon the experience of other countries, like England and Australia, the principle behind the concept of 'Fracture Unit' in a collaborative way is to optimize the organizational structure of the different specialties involved in the management of the fractured patient. Thus, the goal is "a priori" to define and structure a multidisciplinary course in which the patient is automatically inserted at the time of contact with health's care structure, following the fracture event. All this means protocols shared by all the players, without generating additional costs (7).

In this sense, Tuscany region has decided to launch a four-year program for the prevention of femoral re-fractures, open to all residents in Tuscany, aged over 65 who experience a hip fracture. The TARGET project aims to effective and timely ensure treatment to all patients who suffer a hip fracture (not less than 80%), through a structured path that includes the involvement of general practitioners, the orthopedics and other specialists dealing with the treatment of OP.

Within the project, there will be a facilitated access to intravenous therapies that include regional specialized Centers.

Then, even in these situations, the nurse can play an important role by providing questionnaires, brochures producing and distributing information, organizing educational meetings with either patients or families focusing on issues such as prevention of falls and therapeutic adherence. Of particular importance, the administration of specific follow up questionnaires to detect the incidence of new fractures, the mortality in the year following the fracture event, residual disability and deterioration of the quality of life.

Although this program is dedicated to the prevention of fragility fractures in patients with low bone mass, indirectly, the topics can be extended to a wider scenario considering the opportunity through the institution of a healthy diet and a regular physical activity to prevent cardiovascular disease, diabetes and obesity. To increase patient's compliance in taking the therapy means to help to surveillance and decrease other concurrent chronic diseases that often coexist with OP in elderly patients.

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