Motivational interviewing and adherence to osteoporosis regimens

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Osteoporosis is associated with increased morbidity, mortality, and healthcare costs—billions of dollars annually. Although many types of pharmacotherapy are available to prevent or treat the disease, many patients, for various reasons, do not adhere to their prevention or treatment regimen. In this article the authors show how motivational interviewing, initially created for patients with substance abuse problems, can be used to help patients with osteoporosis overcome their ambivalence toward positive behavior change and better adhere to their prevention or treatment plan.

KEY WORDS: **osteoporosis, adherence, motivational interviewing, osteoporosis management, osteoporosis drug regimen**

Osteoporosis is a chronic metabolic disease of the skeletal system wherein bone resorption exceeds bone formation, leading to low bone mass, marked skeletal fragility, and an increased risk for fracture.[1,2] In postmenopausal women, bone loss is related to the effects of aging and the low estrogen state, but it can be exacerbated by immobilization, use of medications such as corticosteroids or gonadotropin-releasing hormones, overexposure to alcohol or tobacco, or nutritional deficiencies related to diet or caused by various malabsorption syndromes.[3]

In 2010, 10 million persons in the United States and 75 million persons in the Americas, Europe, and Japan were estimated to have osteoporosis.[4] Worldwide, the presence of osteoporosis contributes to 9 million fractures annually.[4] Osteoporosis-related fractures, particularly those of the hip, are associated with major increases in morbidity, mortality, and healthcare costs.[2,5] Risk for such a fracture rises dramatically in women aged 70 years or older.[5]

Sequelae of hip fracture include declines in physical, mental, and functional health. In many cases, a hip fracture signals the downward spiral of an otherwise healthy and independent elder. In fact, fractures are considered life-threatening events in the elderly.[5] In the U.S., osteoporosis-related frac-

tures lead to approximately 4 million days of hospitalization and more than 3 million outpatient and emergency department visits per year.[6] About one-half of women who develop a hip fracture rely on others for help with daily activities, one-fifth need long-term care, and one-fifth die within a year.[1] The economic burden of osteoporosis in the U.S. is $13-$17 billion a year,[1,4,6,7] a figure that is expected to rise to $25 billion by 2025.[4,7]

Osteoporosis management approaches

Although these statistics provide a grim outlook on the future of osteoporosis, recent scientific advances in the management of patients with osteoporosis may be able to prevent fractures. A wide array of pharmacologic and nonpharmacologic options is already available.[6]

Pharmacologic interventions work either by accelerating bone regeneration or decreasing bone resorption, resulting in a decreased risk for fracture.[1,2] Teriparatide (parathyroid hormone) is the only agent that increases bone mineral density (BMD) anabolically by enhancing bone formation via the osteoblasts. Other osteoporosis medications decrease bone resorption; these antiresorptive agents include the bisphosphonates, the selective estrogen receptor modulators, and denosumab, a monoclonal antibody that limits activation of nuclear factor kappa B ligands, a component of osteoclasts that is important to their formation, function, and survival.[4,5] Calcitonin, another antiresorptive agent, is mildly effective in improving BMD of the spine.[4]

In addition to drug therapy, patients with osteoporosis need to ingest adequate amounts of calcium and vitamin D. Obtaining the recommended 1200-1500 mg of elemental calcium and 1000 IU of vitamin D is difficult for persons following a typical Western diet, so calcium and vitamin D supplementation is often required.[3]

An important nonpharmacologic intervention for patients with osteoporosis is exercise. Exercise improves muscle efficiency, flexibility, and balance, which results in a decreased risk for falls and, ultimately a decreased risk for fall-related fractures.[8] In a randomized controlled trial (RCT), researchers tested the effects of a 44-week exercise program on bone mass, bone quality, and functional capacity in subjects with low BMD.[8] The exercise program included a combination of land (weight-bearing) and water (non–weight-bearing) exercises aimed at improving muscle strength, endurance, balance, and joint mobility. Pre- and post-treatment testing showed that bone quality and BMD in the intervention group remained the same and functional capacity improved. Results for the controls, who did not participate in the exercise program, showed a significant decline in bone quality and a decrease in physical function capacity. A meta-analysis of four RCTs on the effects of exercise in postmenopausal women with osteoporosis or osteopenia showed improvements in quality of life, physical function, vitality, and pain.[9]

> Only about 60% of patients with osteoporosis adhere to their drug regimens.

Both pharmacologic and nonpharmacologic treatments for osteoporosis have been shown to be effective in reducing bone loss and fracture risk. However, efficacy can be realized only if patients adhere to their management regimen.[9] Based on reports in the literature, only about 60% of patients with osteoporosis adhere to their drug regimens.[1,2,7] To improve this low rate, nurse practitioners (NPs) first need to understand the reasons for lack of adherence in osteoporosis management.

Adherence in osteoporosis management

Adherence involves a combination of compliance and persistence.[2] Compliance refers to the use of medications or other treatments exactly as instructed by a healthcare provider (HCP).[1,2,10] With regard to medications, this process includes taking the proper dose at the prescribed frequency and time of day and following specific instructions (eg, taking the medication with food).[2] Persistence is defined as following a treatment regimen for as long as it is prescribed.[1,2,10] Nonadherence is the failure to comply with precise instructions and/or the premature discontinuation of treatment.

A review of the literature shows various reasons for nonadherence to osteoporosis regimens. A main reason is that osteoporosis is asymptomatic until a fracture occurs; patients are

less likely to adhere to a regimen that prevents something from occurring than to a regimen that relieves acute symptoms. In addition, a belief that one's illness is not serious or life-threatening may result in poor adherence.[1,6] Other reasons cited for low adherence among patients with osteoporosis include complexity of the regimen, high frequency of dosing, high cost of medications, adverse side effects, poor understanding about osteoporosis and its chronic nature, and a poor patient–HCP relationship.[1,2,6,7,11-13]

Nonadherence to osteoporosis regimens results in a significant increase in fracture risk.[13] By contrast, even a slight improvement in adherence may result in reduced fracture rates, hospitalization, and general costs of care and lost productivity.[1,2,12] In light of the forecast on the personal and financial implications of osteoporosis-related fractures, HCPs must develop strategies that increase adherence to osteoporosis regimens.[1,7]

Interventions to improve adherence

A post hoc analysis of the results of an RCT was done to ascertain whether patient adherence to osteoporosis regimens would be improved with the use of educational interventions.[12] Patients were randomized to an intervention group, who received physician-directed education and additional information about osteoporosis, or a control group, who received usual care without the additional education. Results showed that the additional education on osteoporosis did not improve adherence in the intervention group versus the control group.

A systematic literature review of seven studies focused on various interventions to improve adherence to osteoporosis regimens.[7] In two of the studies, the intervention was to provide feedback to subjects regarding their bone turnover markers in response to treatment. Participants in the other five studies received educational material either in person or by brochures, letters, or telephone calls. In the seven studies, the intervention resulting in the greatest improvement in patient adherence was a patient-centered telephonic counseling style used in a nonrandomized investigation by Cook et al.[6] This counseling style is similar to motivational interviewing (MI), a technique that facilitates patient self-motivation for treatment and equips patients with information and insight to overcome their own barriers to adherence so that they may improve their ability to manage their condition. Results of the study by Cook et al[6] showed that participants who received the intervention had better adherence rates than did those who did not participate.

VIEW: Motivational interviewing basics

These results suggest the need for further investigation; a blinded RCT is now testing the use of MI to improve adherence to osteoporosis regimens.[13]

Motivational interviewing

Background—MI was initially developed in the 1980s to help patients reduce substance abuse behaviors (click on the video link at the bottom of this page for more information).[14,15] This patient-centered method of communication aims to evoke one's own intrinsic motivation for behavior change.[16] The philosophy behind the use of MI is that behavior change is complex, and that simply advising patients or prescribing orders to make a change results in temporary change or no change at all.[14] Instead, patients are recognized as having the answers they seek and as being experts about their own being.[17,18] What impedes motivation, a necessary ingredient for behavior change, is unrecognized ambivalence.[17,19] The role of the HCP is to facilitate identification and resolution of this ambivalence,[14,16-19] which oftentimes leads to the desired behavior change.

Since its inception, MI has become increasingly used to modify behavior in healthcare domains such as intimate partner violence, smoking cessation during pregnancy, and dialysis adherence in chronic kidney disease.[6,18,20,21] MI has a strong theoretical foundation.[19] In a review of four meta-analyses on MI, Lundahl and Burke[19] concluded that this technique builds on cognitive dissonance theory and self-perception theory to reduce ambivalence and increase motivation needed for change. The

patient-centered focus of MI, evident in its therapeutic approach of reflective listening and empathy, is said to be derived from Carl Rogers' patient-centered therapy.[17] MI has been hailed as the clinical application of self-determination theory,[18] which states that individuals are innately motivated to improve their own condition and that they are much more likely to adhere to a proposed behavior change if they believe that change is necessary and has personal significance.[15] In addition, the self-determination theory suggests that autonomy is ingrained, and that individuals tend to succeed at change when the motivation to do so is of their own volition, as opposed to being influenced from elsewhere.[18]

Learning the MI technique—Successful use of MI in clinical practice requires a certain level of training, but HCPs need not have a background in psychology or counseling.[14,22] In a review of meta-analyses on the clinical applicability of MI, Lundahl and Burke[19] concluded that the credentials and specific profession of the practitioner had no noteworthy impact on MI outcomes.

Training for MI includes practical exercises in a format wherein MI responses can be checked and modified if needed.[22] In a pilot study, researchers aimed to teach a brief version of MI (brief MI) to third-year medical students.[23] The researchers first developed a curriculum called ***CHANGE***, a mnemonic that captures the essentials of brief MI: ***C***heck patients' perspective regarding their health and health behaviors; ***H***ear what patients say by using reflective listening skills; ***A***void behaviors that are not in alignment with MI; ***N***ote patients' priorities with regard to behavior change; ***G***ive feedback to patients only when requested or after permission has been granted; and ***E***nd the interview by summarizing patients' own plan for behavior change and healthcare follow-up. These researchers taught six instructors in two 4-hour sessions how to teach CHANGE. The instructors then taught CHANGE to the medical students during one 2-hour session. During the teaching session, students had an opportunity to practice brief MI

skills and receive immediate feedback from the instructors, who had been "acting" as patients. In a posttest given right after the training, students showed an increase in their use of brief MI skills, a positive change that held true at a 4-week follow-up.[23]

Applying MI to clinical practice—Practitioners of MI must embrace four key principles and acquire certain therapeutic skills. If properly applied, these principles and skills can help achieve the goal of MI, which is the identification and eradication of patients' ambivalence toward the desired change.[15]

Key principles. The first principle of MI is to *express empathy* for patients' challenges. In doing so, HCPs show respect for and a nonjudgmental attitude toward patients' concerns, which fosters a collaborative relationship.[15,24] Patients and HCPs work together as equal partners, with HCPs giving direction and support[14] while patients supply expertise on their own being.[17]

The second principle is to *develop a discrepancy between patients' behavior and their personal goals*.[15,24] To develop this discrepancy, patients are encouraged to outline their own reasons for behavior change. Once this *change talk* develops, inconsistencies between patients' current behavior and their stated goal can be identified. It is crucial that *patients* speak of the inconsistencies; HCPs merely guide them toward recognizing the difference between current action and desire.[23] The greater and more obvious the discrepancy, the stronger the motivation to initiate a change.[14,15]

The third principle is to *roll with resistance*.[24] Patients' expressions of resistance, whether overt or covert, are indications of ambivalence about change.[15] If their ambivalence is ignored or undermined, and HCPs push harder toward change, patients will defend themselves and resist.[14] Instead, HCPs must remain nonjudgmental and gently suggest new perspectives for patients to ponder,[15,24] which avoids conflict and keeps the lines of communication open.[15]

The final principle is to *support self-efficacy*. To achieve this goal, HCPs express belief in patients and their ability to plan and execute change.[24] HCPs' encouragement and positive reinforcement are ongoing. Continued support for self-efficacy empowers patients to believe that they are in control of their own behavior change.[15]

Basic therapeutic skills. To carry out the key principles of MI, certain basic therapeutic skills are utilized.[24] An important skill is *avoidance of the righting reflex*.[15] Although HCPs may have certain goals for their patients, accompanied by a powerful drive to see these goals come to fruition,[22] they must resist their natural knee-jerk reaction to *right* or fix things.[14,15,22] Instead, they should encourage patients to search within themselves for their own ideas on how to create a change.[15]

Another important skill to hone is *reflective listening*,[15] which entails summarizing patients' statements in order to allow patients to correct any misunderstanding. This process enhances understanding between the two parties. In addition, HCPs can selectively reflect on patients' own statements in favor of change, which encourages further discussion and elicits further *change talk* by patients.[24]

Another important therapeutic skill required in MI is *asking open-ended questions*.[15,24] This type of questioning allows patients to do most of the talking while HCPs listen. This practice is especially important in the early stages of communication.[24] Responses from open-ended questions can shed light on patients' goals and values and guide HCPs regarding where to take the conversation next.[17,24]

The *ask-provide-ask approach* is yet another useful MI skill. Using this technique, HCPs ask patients to explain what they already know about their behavior or condition. If HCPs deem that additional information is needed, they ask patients for permission to present the information (providing unwanted information can build resistance).[14,15] The information is prefaced with permission for patients to disregard it, and is provided in a neutral manner.[14] Following the provision of information, patients are given an opportunity to discuss their interpretation of it.[14,15]

The final therapeutic skill, *affirming and summarizing*, is used throughout the MI process. Affirmations allow for acknowledgment and compliments for any success, recognition of difficulties, and support and encouragement for positive change. Summaries are used to reiterate statements made by patients during the interview, including those made regarding desire for change and HCPs' support for fostering this change.[14,24]

Use of MI precludes HCPs from expressing their own ideas regarding desirable outcomes for patients. This approach does not equate to a lack of care on HCPs' part, but, rather, represents a realization that within patients is the intrinsic motivation to change their lives.[17] Three distinct styles of communication are evident in MI: (1) guiding rather than badgering, (2) encouraging rather than shaming, and (3) negotiating rather than dictating. According to MI's founding fathers, "it is within the spirit of motivational interviewing that these three styles of communication come together."[22] With adequate MI training and inclusion of key principles and therapeutic skills, HCPs can help patients achieve positive behavior change.

Implications for NPs

With the aging of the U.S. population, the incidence of osteoporosis will increase rapidly in the coming years. Many of these patients will be seen by NPs in primary care and women's health practices. Ample effective medications are available, along with well-studied exercise regimens. Use of a combination of pharmacologic and nonpharmacologic interventions can help reduce the risk for osteoporosis-related falls and fractures. However, adherence rates among patients with osteoporosis are historically low. MI has been shown to be effective in helping patients implement favorable behavioral changes, including improved adherence to osteoporosis regimens. The versatility and nearly universal applicability of MI makes this technique fairly easy for NPs to learn and implement in practice, which may significantly alter the course of osteoporosis and osteoporotic fractures in this country.

Conclusion

The foundations of MI are deeply rooted in sound evidence-based theories such as cognitive dissonance theory, self-perception theory, and self-determination theory. This decade-old, patient-centered therapeutic style of communication has been assisting patients in overcoming their ambivalence toward behavior change. MI is not a clever set of tricks used to manipulate patients but, rather, a respectful appreciation of the fact that patients have tools within themselves to create their own change. HCPs' only objective is to evoke change talk from patients, which then creates a discrepancy between current and desired actions. Finally, gentle guidance toward recognition of the discrepancy heightens patients' own innate motivation for the sought-after change.

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