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Medical professionals' perceptions regarding therapeutic adherence in patients with osteoporosis

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Summary

Introduction: Adherence to oral treatment of patients with osteoporosis is low, with a high dropout rate in the first year. The most noteworthy result is the lack of therapeutic response.

Objective: To ascertain the perception of physicians working with osteoporotic patients regarding adherence of these patients.

Methods: Cross-sectional study conducted by opinion survey aimed at primary care physicians and specialists involved in osteoporosis treatment. Participants were selected by purposive sampling.

Results: The questionnaire was answered by 235 specialists encompassing rheumatology (54.5%), orthopedics (10.6%) and primary care (18.7%). In 43.8% of participants, more than 25% of patients sometimes forget to take their treatment. According to 34.9%, more than 75% of patients are aware of treatment. Side effects and management complexity are the majority reasons that lead to a change in medication, mean value of 7.94±2.06 6±2.01 points respectively on a 0-10 scale.

Conclusions: Overall, medical specialists attributed low adherence to side effects, polypharmacy and lack of communication between professionals. Dosage and space use of soluble dosage forms may be options to facilitate patient adherence to treatment with oral bisphosphonates. Improved education concerning the importance of the disease or increased patient monitoring could foster adherence.

Key words: *osteoporosis, surveys, bisphosphonates, therapeutic adherence, opinion.*

Introduction

Osteoporosis is a systemic skeletal disease characterized by low bone mass and altered bone microarchitecture causing increased fragility and consequently increased susceptibility to fractures[1]. According to the WHO diagnostic criteria, about 6% of men and 21% of women aged 50-84 years suffer osteoporosis[2]. At a European level, approximately 27.6 million men and women suffered from osteoporosis in 2010, of which 9% were Spanish. Osteoporosis is a major public health problem due to high predisposition to suffer bone fractures[3,4]. Osteoporosis causes more than 8.9 million fractures annually[5], with high healthcare costs[3,6] and a significant decline in the patient's quality of life[2].

The main objective in treating osteoporosis is to prevent fractures, improve patients' quality of life and ease the pain when it occurs. Most of the drugs available today obtain fracture risk reductions of 50-70% for vertebral fractures and 15-25% for the rest of vertebral fractures[2]; provided that the patient takes the medication continuously for the period of time that most baseline studies have shown effectiveness, between 3 and 5 years. Bisphosphonates are the most commonly used alternative therapy in the management of osteoporosis and are considered the first choice in our sector[7,8].

The term adherence encompasses the concepts of compliance and persistence. Compliance involves when and how the prescribed medication is taken, while persistence refers to how long the patient takes it. On the other hand, drug tolerability concerns the patient acceptance of the medication, based mainly on the perception and impact of the drug's unwanted side effects[9].

As osteoporosis is a silent disease, with no symptoms, even in the case of asymptomatic vertebral fractures, patients tend to think that drug treatment is not necessary. On the other hand, the lack of adherence and poor compliance are determined by other factors such as the drugs' side effects, advanced age of patients, polypharmacy or even fatigue patient to take medication on a long-term basis[10].

Adherence to treatment among patients with osteoporosis is low, with a high percentage of dropouts during the first year[11-15]. The most striking result is the lack of therapeutic response and the consequent increase in fracture. So proper adherence to treatment is not only beneficial to patients' health, but also effective in terms of cost-effectiveness[16-20].

This study aims to determine the perception of medical professionals involved in the treatment of osteoporosis concerning patient adherence to treatment in general and in particular regarding bisphosphonates, as well as analyze possible causes and solutions.

Material and methods

This cross-sectional surveyed primary care physicians (PCP) and specialized care professionals who treat patients with osteoporosis. The survey consisted of 13 questions on health professionals' perception regarding adherence of osteoporotic patients (Annex 1), and was completed through a website. Participants were selected through purposeful sampling and invited by the Spanish Society for Bone and Mineral Metabolism Research (SEIOMM) to which they were associated. To estimate the number of specialists participating in the survey, reference was made to a national population of about 20,000 PCP doctors, 5,000 primary care physicians and medical specialists were selected. According to the calculated sample size, made taking the scenario of worst participation ratio to an expected accuracy of 10% and a confidence level of 95% required a minimum of 200 participating physicians.

Statistical analysis was performed using SPSS version 23.0. (SPSS Inc. Chicago, Illinois, USA). The number and percentage of response was used for the description of categorical variables. The mean, standard deviation, median, minimum and maximum are used to describe continuous variables.

Results

The questionnaire was answered by 235 physicians (63.4% male) with a mean age of 48.77±9.13 years. The most represented specialist areas were rheumatology (54.5%), orthopedics (10.6%) and Primary Care (18.7%). Respondents were from 15 different regional communities, with Andalusia (17.4%), Valencia (14.5%), Catalonia (14.5%) and Madrid (11.9%) showing a greater number of participants. 79.6% reported monthly visits to 100 patients for osteoporosis; the rest, 64.3% visited from 25 to 100 and 15.4% less than 25 patients.

Regarding the perception of physicians consulted on patient adherence to oral treatment for osteoporosis, 43.8% said that more than 25% of their patients sometimes forget to take treatment, although 80.4% reported that nearly half of patients do not take the medication at the recommended hours. 34.9% said that more than 75% of patients are conscious about the need for treatment. However, more than half of the patients stop taking it if they experience discomfort, according to 57.5% of the physicians surveyed (Figure 1).

Among the reasons that cause the lack of adherence, 83.0% of respondents felt that the poor coordination between levels of care is an important factor, mainly due to the lack of communication (41.3%), administrative barriers (15.3%), lack of training (14.0%) and applying different protocols (12.3%).

Regarding the causes for a change in treatment, the doctors surveyed reported that the side effects and management complexity are the main reasons, with an average value of 7.94±2.06 and 6±2.01 points respectively (scale of 1: did not motivate changes, 10: motivated major changes) (Figure 2). On the other hand, they indicated that more than half of patients (57%) were usually involved in the choice of treatment.

Figure 1. Attitude of patients regarding oral treatment for osteoporosis

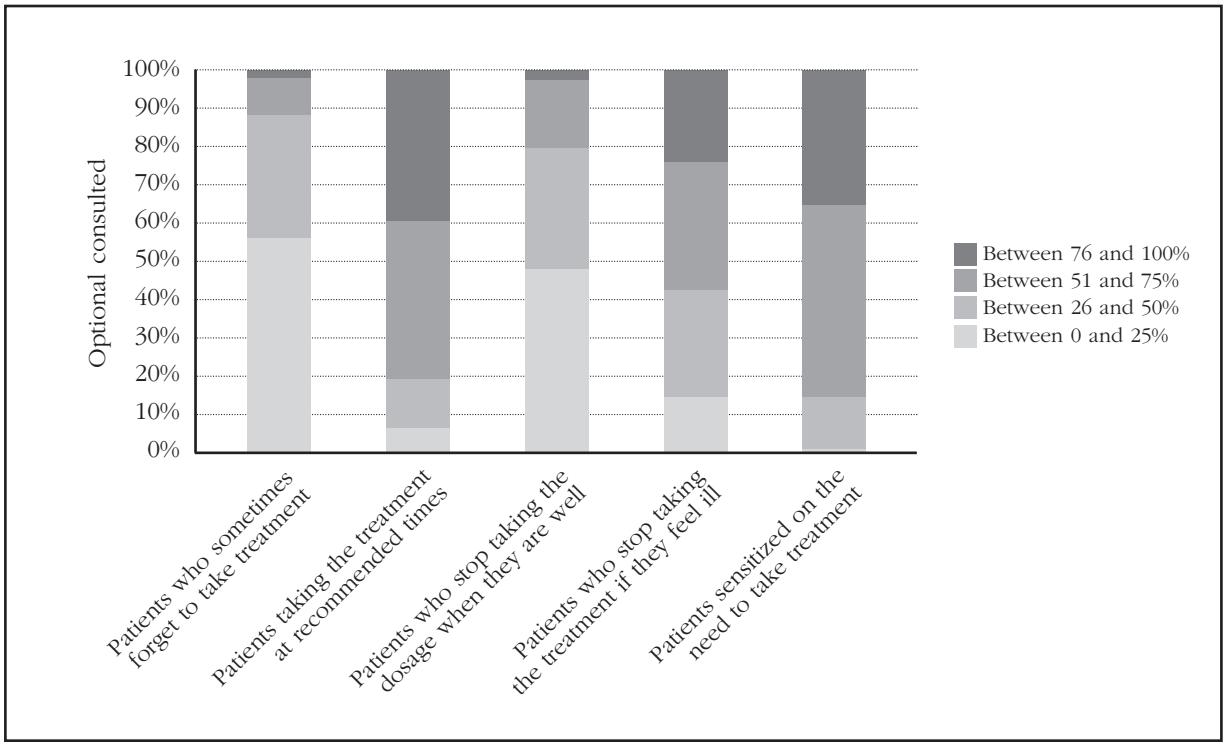
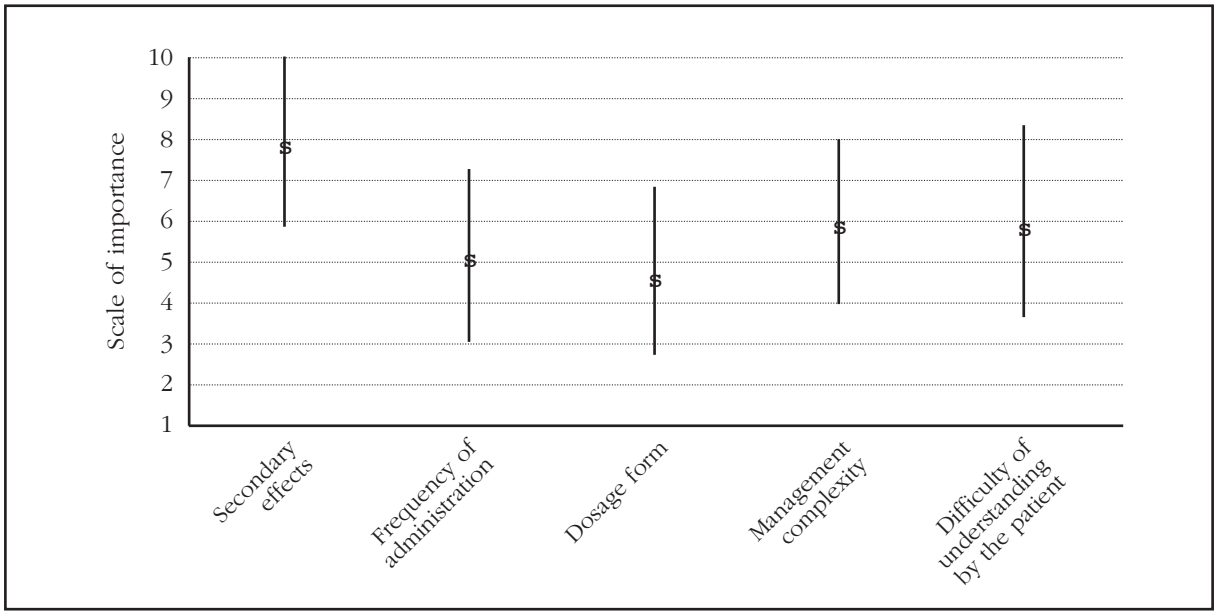


Figure 2. Causes for a change in the oral treatment of osteoporosis

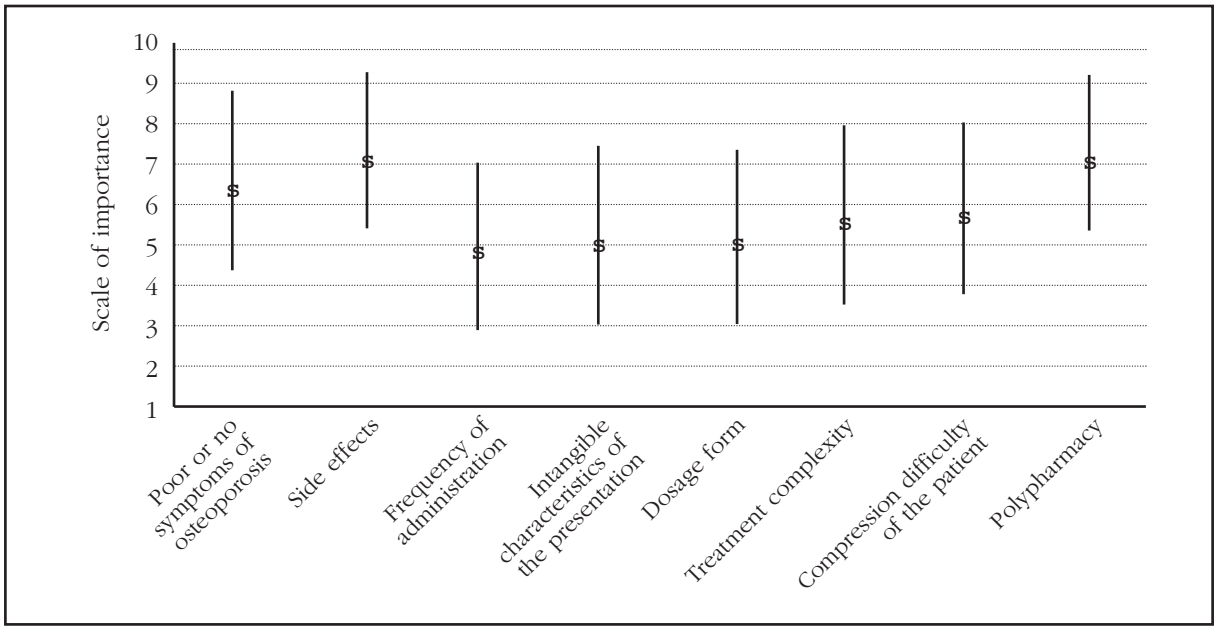


Ascending scale of 1: not motivate changes, 10: motivated major changes.

Regarding the most commonly used methods to assess adherence, 77.9% of respondents reported directly consulting the patient, while 10.2% said that the most common technique is to count the mismatch between the number of containers dispensed or requested by the patient and the amount prescribed. Other methods such as biochemical remodeling markers (4.7%), the Morisky-Green test (3.0%), clinical trial (2.6%) or Haynes-Sackett test (0,9%) were less frequent. Only 0.9% of respondents answered that they did not usually ask about compliance.

Regarding treatment with bisphosphonates, 51-75% of patients are treated and comply with such treatment in 63% and 60.9% of respondents, respectively. Furthermore, among patients who abandon treatment, 40% do so before six months, 29.4% between six and twelve months, and 30.6% after the first year.

Figure 3. Factors causing non-adherence to bisphosphonates



Ascending scale of 1: rare, 10: very common.

According to the physicians surveyed, the main reasons for poor adherence to bisphosphonates are polypharmacy (7.37±1.9 points), side effects (7.34±1.93 points) and the few symptoms of the disease (6.58±2.24 points) (scale of 1: rare, 10: very common) (Figure 3). On the other hand, the restriction of eating and drinking before and after drug intake as instructed is more difficult to follow administration by patients (5.26±2.04 points) (scale of 1: easy to comply, 10: very difficult to enforce) (Figure 4).

As for the impact of various actions to facilitate treatment compliance to bisphosphonates, the most valued (scale of 1: no impact, 10: maximum impact) were: reducing the number of doses (7.57±1.88 points), providing patient with educational material about the disease and its treatment (7.25±1.89 points) and control of adherence in the first few weeks of its inception by nurses (7.12±2.21 points) (Figure 5). Finally, 88.9% of physicians surveyed believed that adherence to oral bisphosphonate treatments would improve greatly or rather a lot if it were administered in a soluble dosage.

Discussion

Regarding monthly care of 100 patients with osteoporosis (79.6% of respondents), and considering that 54.5% of respondents were rheumatology specialists, the results show that, in general, physicians perceive low patient adherence to oral treatment for osteoporosis. The figures concerning compliance and adherence of osteoporotic patients vary among different publications due to the calculation methods used in each. However, all agree that they could be improved[21-23].

The perception of a portion of respondents (43.8%) is that adherence is low, considering that more than 25% of their patients forget to take their medication. These data are consistent with a recent study in primary care centers in the Canary Islands (Spain), where 24.1% of patients with fractures were not taking their prescribed medication[24]. Another retrospective study with similar characteristics performed in Spain showed that 29.5% of patients were not compliant with the proper drug treatments[25].

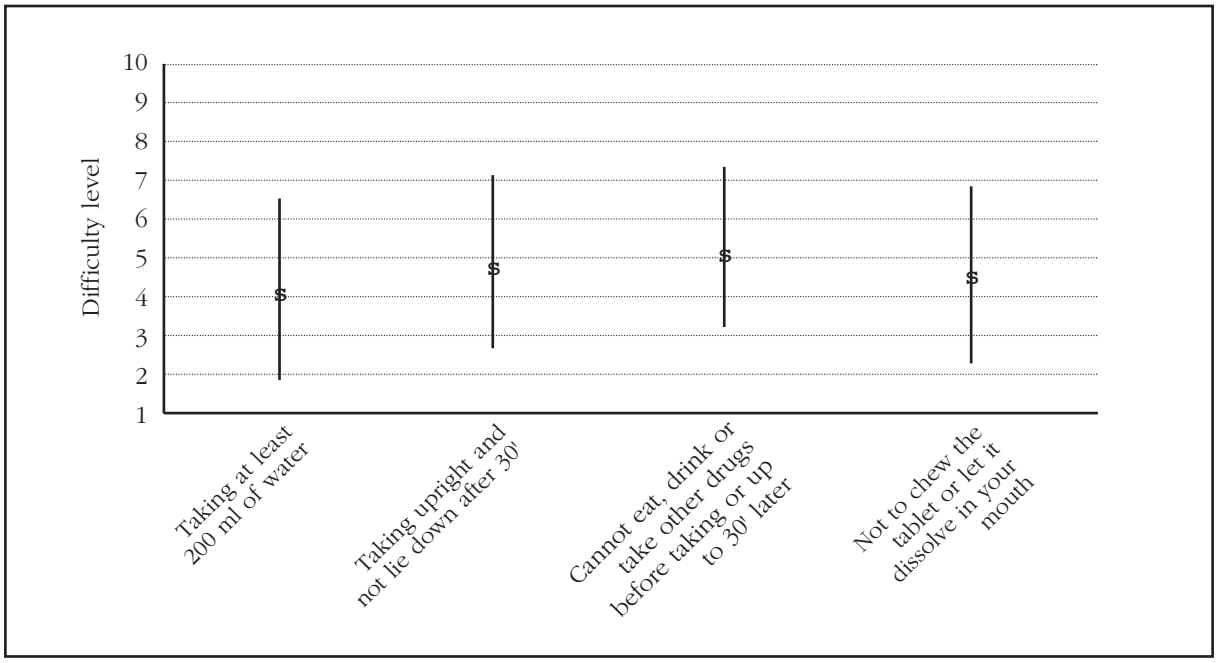
The efficacy of anti-osteoporotic drugs involves prolonged medication, which makes patient neglect of the drug quite common, thus reducing its effectiveness[26]. Clearly, proper adherence is beneficial to patient health[13,16,17,20].

In our study, one of the interesting aspects of the respondents' answers is that among the reasons for lack of adherence, poor coordination between levels of care and lack of communication. There may be communication problems between primary and specialized care, especially at the time of drug prescription, because in many cases the primary care physician is confronted with a medication prescribed by another physician without a specified report. Some studies have already shown that better communication can solve problems better and is a more efficient system[27].

According to respondents, and in line with other publications, other reasons for this lack of patient adherence are the medication's side effects and polypharmacy; which are also perceived as the most common reasons for a change in treatment with bisphosphonates[26,28-32].

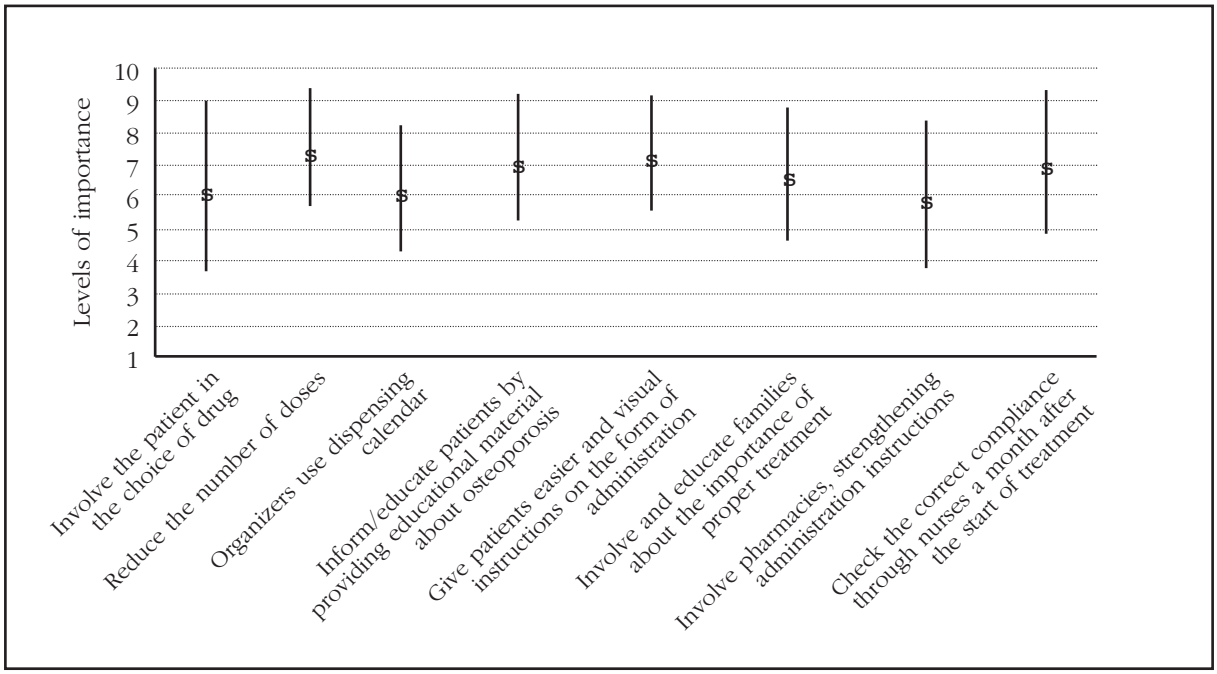
Oral bisphosphonates have become the main drug treatment for osteoporosis[7]. This coincides with the perception of physicians consulted, since, in their view, between 2 or 3 out of 4 patients receiving this treatment present an average level of compliance. However, a high percentage

Figure 4. Assessment of difficulty following instructions for bisphosphonate



Ascending scale of 1: very easy to meet, 10: very difficult to meet.

Figure 5. Actions to improve compliance and correct decision-bisphosphonates



Ascending scale of 1: no impact, 10: maximum impact.

(69.4%) of patients discontinue treatment within the first year, a figure somewhat higher than those reported in other publications[33,34]. In fact, these data reflect the reality of many studies that abandonment of drug treatments and bisphosphonates occurs in 53.9% of cases due to side effects[10].

In this study, polypharmacy and adverse effects seem the main causes of abandonment of oral bisphosphonates. In fact, osteoporosis patients are generally older, and co-morbidity because many of them have received multiple treatments, complicating good compliance and adherence to them. Furthermore, the main adverse effect described with oral bisphosphonates is poor gastrointestinal tolerance, mainly as reflux heartburn or epigastric pain which, as already described in the literature, is one of the main reasons for dropping out.

Assess adherence and treatment compliance require specific tools to ensure methodologic objectivity such as Haynes-Sackett or Morisky-Green tests[9,26]. However, in our study most respondents reported that they preferred direct patient consultation in clinical practice. This reflects the need to improve the query time in both primary care and specialized centers, so that physicians can use more proven methods than simple observation in daily practice.

In line with these study results, the reduced frequency of taking medication, patient education and monitoring of adherence have been proposed among the actions considered that could improve the taking of bisphosphonates[29,30,35-39].

Probably a combination of all these recommendations would be the best strategy to promote compliance and adherence. On the other hand, as most osteoporosis patients are elderly and may have difficulty swallowing, a soluble dosage form would improve the gastric tolerability of bisphosphonates, which would favor patients' treatment compliance, as noted by 88.9% of those physicians surveyed[40].

In conclusion, this survey shows that experts who manage osteoporosis perceived low patient adherence to oral treatment of disease. Poor adherence is mainly embodied by the abandonment of medication during the first year of therapy, and is mainly associated with the side effects, polypharmacy and lack of communication between professionals. Improved comfort by reducing the number of shots and using soluble dosage forms, improved education about the importance of the disease and improved patient follow-up, could foster adherence.

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Annex 1. Additional material: Survey Questionnaire

1. For patients receiving oral treatment for osteoporosis, indicate the percentage:

a) Sometimes forget to take treatments
- 0 - 25%
- 26 - 50%
- 51 - 75%
- 76 - 100%

b) Take the treatments at recommended times
- 0 - 25%
- 26 - 50%
- 51 - 75%
- 76 - 100%

c) Stop taking their treatment doses, when they are well
- 0 - 25%
- 26 - 50%
- 51 - 75%
- 76 - 100%

d) Treatments stop taking them if they are unwell
- 0 - 25%
- 26 - 50%
- 51 - 75%
- 76 - 100%

2. Assess whether the following reasons generate a change in the oral treatment of osteoporosis (rate of 1 to 10, with 10 as motive major changes and a 1 when not cause any changes):

a) Side effects
b) Frequency (daily, weekly, monthly...)
c) The pharmaceutical form (sachets, tablets...)
d) Complexity of administration (fasting, upright position...)
e) Difficulty of understanding by the patient

3. What percentage of your patients that you are aware of the need to take the drugs prescribed think?
- 0 - 25%
- 26 - 50%
- 51 - 75%
- 76 - 100%

4. Do you believe. That one of the causes of poor adherence is the lack of coordination between different levels of care?
- Yes, of administrative impediments
- Yes, by the application of different protocols
- Yes, poor communication
- Yes, lack of training
- No

Annex 1. Additional material: Survey Questionnaire *(cont.)*

5. Are your patients involved in choosing their treatment?

- Yes
- No, because I do not have time
- No, because they have low cultural level
- No, because I leave it to my criteria

From here, we focus on treatment with oral bisphosphonates:

6. What percentage of your patients with osteoporosis are treated with oral bisphosphonates?

- 0 - 25%
- 26 - 50%
- 51 - 75%
- 76 - 100%

7. Of the patients treated with oral bisphosphonates, what percentage comply the treatment?

- 0 - 25%
- 26 - 50%
- 51 - 75%
- 76 - 100%

8. Rate from 1 to 10 the difficulty in compliance for patients with the following instructions for administering oral bisphosphonates (1: very easy to adhere, 10: very difficult to comply):

- It takes at least 200 ml of water
- Take the drug upright and not lie down within 30 minutes of taking it
- Not being able to eat, drink (except for not mineral water) or taking other medication before taking the drug or to at least 30 minutes after
- Not being able to chew the tablet or let it dissolve in the mouth

9. Patients that you control and stop treatment with oral bisphosphonates for osteoporosis ¿how long after having started the treatment do so, on average?

- Before 3 months
- At 3-6 months
- At 6-12 months
- After the first year

10. Assess potential actions that could be taken to improve compliance and correct taking of oral bisphosphonates impact. (1: no impact, 10: maximum impact):

a) Involve the patient in the choice of drug
b) Reduce the number of doses
c) Use dispensing organizers/calendars
d) To inform/educate patients with delivering training material about the disease and the importance of osteoporosis
e) Provide the patient with simple and visual instructions regarding administration
f) Involve and educate families about the importance of correct treatment
g) Involve pharmacies, simplifying the dose instructions
h) Check for correct compliance through nursing staff in the first month of treatment

11. Assess causes for patients with osteoporosis receiving oral bisphosphonates not to abandon treatment. (1: very rare, 10: very common):

a) Poor or no symptoms of osteoporosis
b) Side effects
c) Frequency of administration
d) Presentation organoleptic characteristics (shape, size, hardness, taste, texture...)
e) Pharmaceutical form (envelopes, tablets...)
f) Complexity treatment
g) Difficulty of understanding by the patient
h) Poly-medication (concomitant intake of 6 or more different active ingredients)

12. What method(s) used most frequently to assess adherence to oral therapies for osteoporosis?

- Indirect method of communication self-fulfilling/Haynes-Sackett
- Morisky-Green Test
- Mismatch in the number of packages dispensed/requested by the patient and prescribed
- Direct patient consultation
- Clinical trial
- Biochemical markers of remodeling
- I do not usually ask about treatment compliance

13. Do you think a soluble dosage form will improve adherence to oral bisphosphonate treatments?

- Not at all
- Little
- Quite a lot
- A lot

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