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ORIGINAL ARTICLE

# Perception, knowledge, and use by general practitioners of Belgium of a new WHO tool (FRAX®) to assess the 10-year probability of fracture

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**Abstract** The FRAX® tool that calculates the 10-year probability of having a fracture has recently been validated for Belgium. Little is known about the perception and knowledge that GPs have about this tool in their daily practice. A survey has been conducted as part of a screening campaign for various diseases. The primary objective of the present study was to assess the perception and the knowledge of the FRAX® tool by GPs. The secondary objective was to assess the impact of an information brochure about the FRAX® tool on these outcomes. The survey was sent to a sample of 700 GPs after only half of them had received the information brochure. The survey results show that, out of the 193 doctors who responded to the survey, one-third know the FRAX® tool but less than 20 % use it in their daily clinical practice. Among those who use it, the FRAX® tool is largely seen as a complementary but not as an essential tool in the diagnosis or in the management of osteoporosis. It appears that the brochure could improve the knowledge of the FRAX® tool but it would not be more efficient on its use in daily practice than the other sources of information. At present, the use of the FRAX® tool in Belgium is limited but an information brochure could have a positive impact on the knowledge of the FRAX® tool.

**Keywords** FRAX · Osteoporosis · Public health · Survey · Information brochure

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## Introduction

Osteoporosis is a common medical condition with substantial health and societal effects. Campaigns to increase the awareness and understanding of osteoporosis among clinicians were launched in the Western countries more than two decades ago. Primary care physicians have the opportunity to screen women for osteoporosis and intervene as indicated [1]. As a result of the aging population, the role of general practitioners (GP) in managing patients with osteoporosis has increased considerably. In general, the knowledge of GP about the diagnostics and risk factors associated with osteoporosis seemed adequate [2]. Several authors attributed such knowledge of osteoporosis management especially to women doctors and younger GPs and found room for the improvement of management capabilities [3]. However, although rates of screening seem to be increasing over time, further improvements still need to be done. For instance, a systematic review of articles examining trends in BMD testing from 1992 to 2002 found that screening frequencies among at-risk patients were low, ranging from 1 to 47 % [4].

Several guidelines on the management of osteoporosis and fracture risk have been published, including a European guidance translated in various languages [5]. This guidance highlighted the fact that even though a low BMD is strongly associated with the risk of fracture, different risk factors, such as age, history of a prior fragility fracture, steroid use, and many others, are independent contributors to the risk of fracture. These risk factors, added to the BMD measurement, improve the sensitivity of the identification of patients at high risk of fracture [5]. Recently, the importance of additional risk factors such as age and prior fractures has been incorporated into some clinical guidelines (e.g., National Institute for Health and Clinical

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Excellence (NICE) Osteoporosis Technology Appraisals) or been used in a more subjective way by specialists to rationalize approaches to treatment. The introduction of the FRAX® algorithm has resulted in a more reliable way to estimate fracture risk. The FRAX® tool (www.shef.ac.uk/FRAX) stratifies fracture risk more accurately than it is possible with the use of BMD alone [6]. FRAX® computes the 10-year probability of a hip fracture or a major osteoporotic fracture. A validation of the FRAX® tool has been launched recently in Belgium [7, 8].

GP states that access to information on osteoporosis is easy and that they frequently use journals, lectures, and guideline documents as sources of information [3]. However, little is known about the knowledge and the perception of the recently validated FRAX® tool by Belgian GP. The primary objective of the present study is to assess the perception and the knowledge of the FRAX® tool by GPs. The secondary objective is to assess the impact of an information brochure about the FRAX® tool on these outcomes.

## Materials and methods

This survey has been conducted as part of a screening campaign for various diseases launched by the Province of Liège.

An information brochure about the FRAX® tool has been developed based on collaboration between the Department of Public Health of the University of Liège and the Province of Liège. The description of the FRAX® tool in the brochure was based on the literature and on the official Web site (http://www.shef.ac.uk/FRAX). To judge its comprehension, a questionnaire on the content of the brochure was completed by 10 general practitioners and 2 bone specialists. Based on their answers and remarks, as well as on the team comments, the definitive brochure was made.

A sample of 700 GPs was randomly selected from a database of all general practitioners in the province of Liège ($n = 1867$). In order to judge the effectiveness of the brochure on knowledge and perception of the FRAX® tool, only half of the doctors received the brochure in November 2010. In December, a questionnaire was sent to the entire sample of 700 GPs to assess the state of perceptions, knowledge, and use of the FRAX® tool among physicians. The questionnaire was divided into three parts. The first contained general questions regarding the physician's practice (i.e., years of experience and work environment). The second probed the doctor's knowledge about the FRAX® tool (i.e., by which sources of information he knew it, further research and perception of the tool). Finally, the last part assessed whether the GPs used or not the FRAX® tool in their daily practice (i.e., reasons for the nonuse, frequency and method of use, impact of the use on the information strategies to patients, and therapeutic intervention). Responses were entered in an Access database and were analyzed using Statistica software.

Chi-square statistical analyses were carried out between the two groups of GPs; those who received the brochure and those who did not. Logistical analyses were also performed to weigh the effect of the brochure on the perception and use of the FRAX® tool compared to the effect of other potential sources of information (e.g., medical representative, conferences, and medical journals).

## Results

The survey results show that, out of the 193 doctors who responded to the survey, one-third knows the FRAX® tool (37.3 %) but less than 20 % use it in their daily clinical practice (19.7 %) (Fig. 1). Of the 193 physicians, 70 % had an experience of over 25 years.

Chi-square statistical analyses showed that the GPs' experience seems to have a significant effect on the knowledge of FRAX® ($Chi^2$ Pearson $= 11.27$, $p < 0.05$). In fact, the group of GPs who had a lesser experience (less than 10 years) seems to know better the FRAX® tool. However, the work environment does not seem to have an effect on the doctor's knowledge. Regarding the use of the FRAX® tool, when the analyses are limited to the group of doctors who know the FRAX® tool, neither the experience nor the work environment shows some significant effect.

Among those who know it, the FRAX® tool is largely seen as a complementary but not as an essential tool in the diagnosis or in the management of osteoporosis (Fig. 2). However, it is considered as complementary and essential

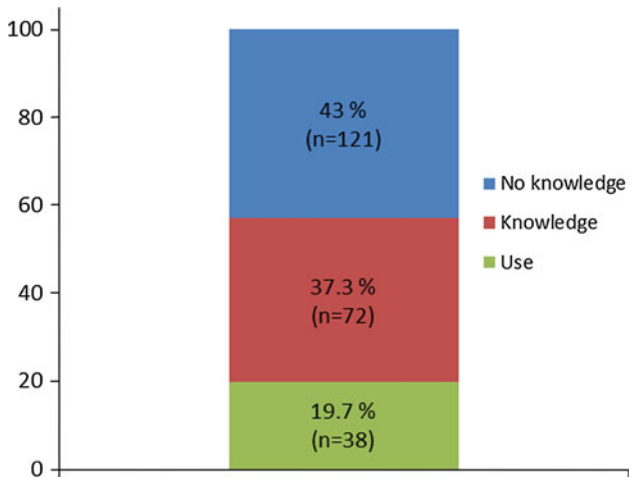


**Fig. 1** Distribution of general practitioners according to the state of knowledge and use of the FRAX® tool ($n = 193$)

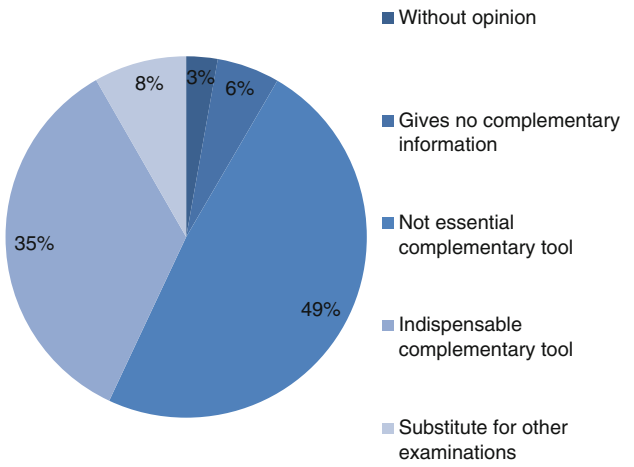


**Fig. 2** Distribution of the doctors' perceptions about the FRAX® tool ($n = 72$)

in the diagnosis or in the management of osteoporosis by one-third of these physicians.

The survey highlights a lack of sufficient knowledge of the algorithm by medical doctors who do not use the FRAX® tool (Fig. 3). Indeed, over 60 % name the lack of sufficient knowledge of the tool as the reason why they do not integrate it into their daily practice. The remaining 30 % mention various reasons (lack of time, no suitable material). Only less than 3 % have not sufficient confidence in the FRAX® tool to use it.

Figure 4 shows the distribution of the sources of information of the 72 GPs who know the FRAX® tool. Interestingly, the brochure and medical representatives are the sources of information most widely acknowledged, followed by scientific journals and congresses. However, the logistic analyses performed on this subgroup showed that to receive the brochure had no more influence on the perception and use of the FRAX® tool compared to other potential sources of information (e.g., medical representative, scientific conferences, and scientific journals). Thus, it

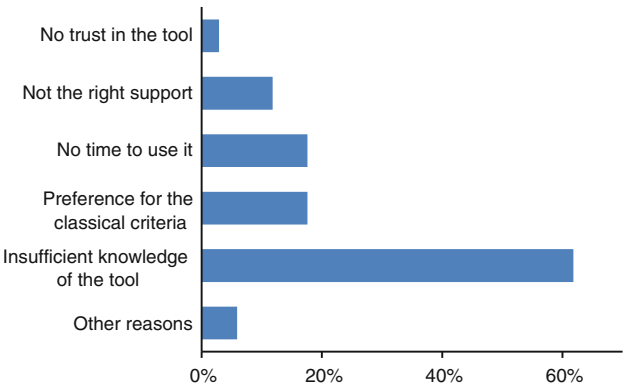


**Fig. 3** Distribution of the reasons why doctors do not use the FRAX® tool ($n = 34$). GPs could choose several reasons

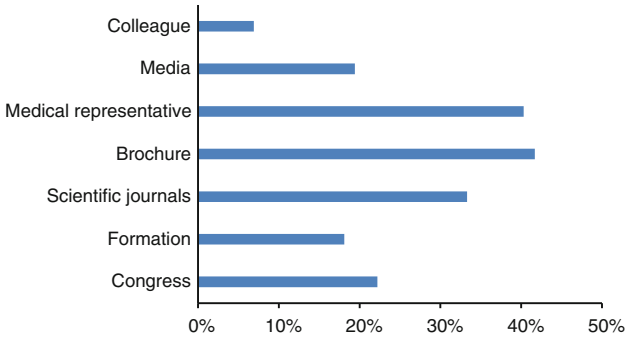


**Fig. 4** Distribution of the doctor's sources of information about the FRAX® tool ($n = 72$). GPs could choose several types of sources of information

appears that the brochure could improve the knowledge of the FRAX® tool but it would not be more effective on its use in daily practice than the other sources of information.

## Discussion

This survey, conducted at the end of the year 2010 in Belgium showed that a substantial proportion of the GPs do not know and do not use the FRAX® tool in their clinical practice. Among the FRAX® users, few find the tool essential.

The first explanation for the low use of the FRAX® tool is obviously the absence of knowledge of this tool. A little less than 50 % of our GPs have no information about this tool. We believe that a better cooperation between the primary and secondary care sectors should enhance continuing education about the FRAX® tool. A direct involvement of patients could also be of primary importance. For instance, even if GPs claim that they first raise the issue of osteoporosis with their patients rather than vice versa [3], a randomized study showed that specific chart reminders to physicians combined with mailed patient education substantially increased the levels of bone density testing and could potentially be used to improve osteoporosis screening in primary care [9]. In that study, the authors were not able to detect a significant effect of the physician chart reminders alone. Consequently, an important theme was the need for patient education. As a matter of fact, a study performed in Belgium by our group highlights the importance of educating patients as well as physicians to increase awareness [10]. We evaluated a 15-year health promotion strategy toward osteoporosis. This survey involved two Belgian cities, from which 4800 people older than 45 were randomly selected. The medical community and the general population in one city (Liège) received a constant health promotion strategy aimed at increasing awareness of osteoporosis in postmenopausal

women. The other city (Aalst) was the control. Self-reporting of osteoporosis prevalence was significantly higher in Liège (10.8 %) than in Aalst (4.8 %), as was the use of prescription drugs for osteoporosis among women aged 45–64 (26.0 % in Liège, 10.5 % in Aalst). Further research should aim to establish how successfully the FRAX® tool would be implemented in primary care with these measures but we believe that they could facilitate the systematic and effective delivery of preventive health services to patients in the primary care setting.

The second explanation about the low use of the FRAX® tool in this survey is related to the absence of national guidelines on the use the FRAX® tool and to the absence of requirement to calculate FRAX® to have access to drug reimbursement. In Belgium, a treatment against osteoporosis is reimbursed by the Belgian social security if the woman has a BMD *T* score below −2.5 at the lumbar spine, the femoral neck or the total hip, and/or at least a prevalent vertebral fracture. Even if treatment consideration based on FRAX® results has been suggested for Belgian women [11], it has not been taken into account by the Belgian social security. Our results are consistent with a US survey showing that primary care physician do not use biochemical markers and 25(OH)D testing in the management of osteoporosis because of a lack of clear guidelines regarding their clinical use [12]. Anyway, even with clear guidelines, it has been shown in a German study that although GPs are aware of osteoporosis as an important health problem and felt competent in the management of this disease, only half of the respondents knew and used the national guidelines [13]. Various ways of improving the knowledge and the use of screening tools have been suggested by authors. For instance, the use of a point-of-care decision-support tool has been shown not only to improve osteoporosis screening rates significantly [14, 15] but appeared to be an independent predictor of screening completion [16]. More research is needed to increase the knowledge and the use of national or international guidelines.

Our survey also showed that the information brochure has little effect on the knowledge of the FRAX® tool by GPs. Our results are similar to a systematic review that found that passive distribution of educational materials had only little impact of unknown clinical importance [4]. Printed materials might be necessary to transmit knowledge, but they are probably insufficient to change practice. Despite this, most guidelines have been disseminated through journals, printed educational materials, and continuing education conferences and workshops, which have consistently been shown not to change behavior [5]. We need to consider the nature of the information, the characteristics and beliefs of the physicians to whom it is directed, and environmental factors that could facilitate or impede its adoption to create clinical practice guidelines or other educational material that will bring about improved performance and health care outcomes.

We have limitations in this study. Our response rate (27 %) falls slightly below the range of several other surveys of GPs about osteoporosis (e.g., 28 % for Simonelli et al. [17], 34 % for Perez-Edo et al. [18], 36 % for Jaglal et al. [19], and 37 % for Weiss et al. [12]). We cannot exclude that those who did not respond were different, in some important instances, from those who participated. The participating primary care physicians are likely to be more interested in osteoporosis and related conditions and to have a better knowledge and more appropriate attitudes toward these conditions. For instance, a study found that providers who were high users of BMD testing had more female patients in their practice and were also more likely to be female themselves [20]. Unfortunately, by the blinded nature of this study, we have little information about the characteristics of the GP. We did not test the competence of GPs in osteoporosis or fracture risk management since we tried to avoid any feeling of an awkward examination that might have negatively affected the response rate. Moreover, social desirability may have stimulated a tendency to over report the use of the current guidelines. At least, our information brochure sent to the GPs was not personalized. Even if the effect of personalized GPs letter is not known, the effect of personalized letter to the patients seems to increase osteoporosis screening [9, 21].

In conclusion, information gathered in the present survey is essential as a baseline prior to developing educational initiatives and effective strategies on prevention and management issues aimed at improving the care of patients with an increased risk of fracture.

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**Conflict of interest** The authors declare that they have no conflict of interest.

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