

Original

Preferences of Spanish-speaking patients for communication of fracture risk due to osteoporosis – A substudy of the Risk Communication in Osteoporosis Study (RICO study)

Xavier Nogués^{1,2}, Diana Ovejero², Carmen Giménez-Argente¹, Jaime Rodríguez-Morera¹, Abora Rial-Villavecchia¹, Eloi García-Vives¹, María Lourdes Cos¹, Jade Soldado-Folgado^{1,2}, Mariona Llaberia¹, Ariadna Brasé¹, Irene Petit¹, Rosa Ana Sabaté¹, Jose María Mora-Luján¹, Charlotte Beaudart³, Stuart Silverman³, Mickael Hilgsmann⁴, Natalia García-Giralt², and the RICO Study Research Working Group*

¹Internal Medicine Service. Hospital del Mar. Universidad Pompeu Fabra. Barcelona, Spain. ²Musculoskeletal Research Group. Hospital del Mar Research Institute. CIBERFES. Barcelona, Spain. ³Department of Health Services Research. CAPHRI Care & Public Health Research Institute. Maastricht University. Maastricht, The Netherlands. WHO Collaborating Center for Epidemiology of Musculoskeletal Health and Aging, Division of Public Health, Epidemiology, and Health Economics. University of Liège. Belgium. ⁴The OMC Research Center (Beverly Hills). United States Cedars-Sinai Medical Center. Los Angeles, California. USA

Abstract

Introduction: the Risk Communication in Osteoporosis Study (RICO) is an international multicenter study evaluating the preferences of patients with osteoporosis regarding fracture risk communication.

Objective: to compare the results from Spanish-speaking countries participating in the RICO study to determine whether cultural differences influence preferences in fracture risk communication.

Methods: postmenopausal women with varying fracture risks and educational levels were recruited. A structured questionnaire was designed covering various domains, including sociodemographic data, knowledge about the disease and fracture risk, preferences for graphical, written, and/or verbal communication regarding fracture risk, and opinions on therapeutic decisions after understanding the risk.

Results: of the 332 patients included in the international study, 94 were from Spanish-speaking countries: 36 from Mexico, 30 from Argentina, and 28 from Spain. A higher percentage of participants from Spain (78.6 %) and Mexico (86.1 %) had received prior information about their fracture risk compared to the international RICO study average (56 %). Spanish-speaking patients preferred visual forms of communication about fracture risk (e.g., printed materials) but wanted these to be accompanied by verbal explanations from healthcare professionals. Mexican patients displayed different preferences compared to Spanish patients in most presentations.

Conclusions: clearly conveying information about fracture risk while considering the healthcare and cultural differences among patients could improve therapeutic management.

Keywords:
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*The list of coauthors for the RICO Study is provided at the end.

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Correspondencia:

Xavier Nogués Solán. Internal Medicine Service.
Hospital del Mar. Pg. Marítim de la
Barceloneta, 25, 29. 08003 Barcelona, Spain
e-mail: xnogues@psmar.cat

INTRODUCTION

The shared decision-making model between physician and patient is based on the use of informational tools that enable the patient to better understand their disease. Shared decision-making tools regarding diagnostic tests and/or treatments emerged in the 20th century (1,2), a time when society increasingly demanded information about diseases (3).

The current prevalence of osteoporosis (OP) in postmenopausal women worldwide is estimated at 23.1 %, and in men over 50 years of age, at 11.7 % (4). Projections for 2050, considering the growth of the population over 60 years old, estimate the global number of osteoporotic fractures at 6.26 million hip fractures (5). Thus, OP is an extraordinarily prevalent disease with significant consequences that profoundly impact those affected and will substantially influence health-care systems in the coming years.

Clear and understandable information from physicians about fracture risk is a critical aspect of the doctor-patient relationship for those diagnosed with OP. Properly communicating this information allows patients to better understand the disease, its consequences, treatment efficacy, and potential side effects. It facilitates shared therapeutic decision-making and positively reinforces treatment adherence (2,6).

Regarding OP, there is a discrepancy between the number of patients with fragility fractures and those receiving treatment to prevent new fractures (7). This suggests that many patients remain at high or very high risk of experiencing another fragility fracture, partly due to insufficient information about the consequences of OP.

However, informing patients about OP and the risk of new fractures in clear and appropriate language is challenging. This complexity arises partly from the wide range of topics to be addressed, including diet, exercise, harmful elements to avoid, and therapeutic options, as well as the lack of established communication tools for conveying such information (8). Additionally, it is uncommon for osteoporotic patients who have already experienced a fracture to receive adequate information about the risk of subsequent fractures, despite the availability of specific prediction tools such as the FRAX risk score (9). This contrasts with conditions like cancer, where patients increasingly share decisions on therapeutic options based on recurrence risk (10).

In this context, the “Risk Communication in Osteoporosis (RICO)” study (11) was developed as an international multicenter study based on a structured survey of women with osteoporosis, with and without fragility fractures, to explore their preferences regarding how to receive information about fracture risk.

The present study presents a subanalysis of the RICO study, analyzing and comparing the results from Spanish-speaking countries—Mexico (MEX), Argentina (ARG), and Spain (SP)—to observe whether cultural differences influence preferences for fracture risk communication.

METHODS

STUDY DESIGN AND OBJECTIVES

The design and methodology of the “Risk Communication in Osteoporosis (RICO)” study were recently published (11). Briefly, we conducted an international study based on a structured survey of women with OP, with and without fragility fractures, varying fracture histories, and different levels of education. The aim was to understand their preferences for receiving information about their risk of fragility fractures. Additionally, the relevance and importance of different communication modalities were evaluated, and a model was proposed tailored to each studied population.

The objective of this substudy is to evaluate the communication preferences of Spanish-speaking patients.

Below, the main features of the study are described.

Study scope

The RICO study was conducted with patients from 11 centers in various countries: the United States, Canada, Argentina, Mexico, Spain, Belgium, the Netherlands, the United Kingdom, and Japan. Participating centers were invited individually by the study coordinators and through patient associations such as the Canadian Osteoporosis Patient Network and the UK Royal Osteoporosis Society.

Inclusion criteria

Each center was required to include 30 postmenopausal women with OP or fracture risk. Each center had to include at least 10 patients with fragility fractures and 10 without prior fractures. Participants were required to have diverse educational backgrounds, with at least 10 patients having higher education and 10 having only primary education. Regarding treatment, at least 10 patients needed to be actively taking pharmacological treatment for osteoporosis, while 10 were not.

Survey design

The methodology for survey design and the preliminary pilot study has been extensively described by Beaudart et al. (11). Briefly, a team of experts developed a questionnaire in English, inviting patient feedback on its design. The finalized questionnaire was structured across multiple domains and translated into several languages: French, Chinese, Japanese, and Spanish, accommodating regional variations for Spain, Latin America, and Central America.

The final questionnaire, included in annex 1 (<https://www.revistadeosteoporosisymetabolismomineral.com/anexos/00048-01.pdf>), was divided into the following sections: 1) an introduction to the study objective and the collection of sociodemographic data; 2) a section to assess the patients' knowledge and interpretation of fracture risk; 3) a section on patient preferences for receiving information about fracture risk—numerical or written, verbal presentation, or visual formats such as red-yellow-green colors or face icons; and 4) opinions on receiving information about fracture consequences and when to consider starting treatment if fracture risk was presented at 2 or 10 years.

Ethical considerations

The study was approved by Advarra, an Institutional Ethics Committee in the United States, as well as local

ethics committees where required. In Spain, approval was granted by the Parc de Salut Mar Research Ethics Committee for Medicinal Products, No. 2022/10299, "Improving Risk Communication in Osteoporosis (RICO)", protocol code 20197347.

Statistical analysis

Statistical analysis was performed using SPSS Statistics 24 (IBM Corporation, Armonk, NY, United States). Differences in patient characteristics and preferences between countries were analyzed using chi-square or Fisher's exact test for categorical/binary variables and one-way ANOVA for quantitative variables. Differences within a single country were analyzed using the chi-square Goodness of Fit test. A p -value < 0.05 was considered significant.

RESULTS

In the global study, a total of 332 women were included, with a mean age of 67.5 ± 8.0 years, 94 of whom were from Spanish-speaking countries: MEX ($n = 36$), ARG ($n = 30$), and SP ($n = 28$). Table I shows the demographic characteristics of the patients. In these three countries, 81.9 % of the participants reported having been diagnosed with OP by their doctors, which was above the 70 % value obtained in the global study.

Table I. Clinical and sociodemographic characteristics of the population included in the study

	All ($n = 94$)	MEX ($n = 36$)	ARG ($n = 30$)	SP ($n = 28$)	p -value
<i>Interview format</i>					
Online	27 (28.7 %)	26 (72.2 %)	0 (0.0 %)	1 (3.6 %)	$p < 0.001$
Direct	67 (71.3 %)	10 (27.8 %)	30 (100. %)	27 (96.4 %)	
Age (years)	67.9 ± 8.1	66.5 ± 7.36	68.2 ± 8.55	69.4 ± 8.69	0.007
<i>Education</i>					
Primary	16 (17.0 %)	4 (11.1 %)	2 (6.7 %)	10 (35.7 %)	
Basic Secondary	11 (11.7 %)	6 (16.7 %)	2 (6.7 %)	3 (10.7 %)	
Advanced Secondary	16 (17.0 %)	4 (11.1 %)	9 (30.0 %)	3 (10.7 %)	
Post-Secondary	10 (10.6 %)	2 (5.5 %)	8 (26.6 %)	0 (0.0 %)	
University	41 (43.7 %)	20 (55.6 %)	9 (30.0 %)	12 (42.9 %)	
Diagnosis of OP	77 (81.9 %)	27 (75.0 %)	22 (73.3 %)	28 (100 %)	NDA
Treatment for OP	50 (53.1 %)	14 (38.9 %)	15 (50 %)	21 (75 %)	$p < 0.01$
History of fracture	38 (40.4 %)	15 (41.7 %)	9 (30.0 %)	14 (50.0 %)	NDA
<i>Previous fractures</i>					
Spine	8	0	1	7	
Hip	6	1	3	2	
Wrist	13	8	1	4	
Humerus	9	4	3	2	
Other	13	6	2	5	

p -value across the different countries using chi-square (or Fisher's exact test) for categorical/binary variables and one-way ANOVA for quantitative variables; OP: osteoporosis; NDA: no data available.

A total of 40.4 % of the women from these three countries reported having had a fracture, with prevalence ranging between 50 % in SP, 41.7 % in MEX, and 30 % in ARG ($p = 0.295$). In terms of treatment, 75 % of participants in SP were on pharmacological treatment, whereas only 38.9 % in MEX ($p < 0.01$), and ARG was intermediate at 50 %.

At the start of the interview, participants were asked about their education and specifically their ability with numbers. In both SP and ARG, 46 % of patients reported feeling comfortable with numerical elements, compared to 66.7 % in MEX (Table I).

When participants were asked if they considered it important to receive information about their fracture risk on a scale from 1 to 7, the results were 6.79 ± 0.6 in SP, 6.23 ± 1.3 in ARG, and 6.19 ± 1.8 in MEX, with no significant differences between the three countries.

A total of 78.6 % of participants in SP reported having received previous information about their fracture risk, 46.7 % in ARG, and 86.1 % in MEX, with significant differences between ARG and the other two Spanish-speaking countries ($p = 0.007$).

GRAPH PREFERENCES

When asked about their preference for receiving information about fracture risk from three proposed color-coded charts (red-yellow-green) (Fig. 1A), 78.6 % of SP patients preferred the information in the form of a red-yellow-green arrow, significantly vs the other 2 options ($p = 0.001$). On the other hand, participants from MEX and ARG differed from SP, opting for the vertical traffic-light style in 58.3 % and 40 %, respectively ($p = 0.001$) (Fig. 1B).

Regarding the graphical options for presenting fracture risk using "happy" or "sad" faces (Fig. 2A), the option with a numerical scale was preferred in SP by 67.9 %, and similarly in ARG with 66.7 %, while in MEX the majority had no preference for any of the options ($p = 0.001$) (Fig. 2B). Regarding whether the "happy" faces should be placed at the top or bottom, most in SP and MEX had no preference, while ARG preferred the "happy" faces at the top in 61.9 % ($p = 0.009$). Regarding the graphical representation of the faces in color or black and white, 92.9 % in SP preferred color. MEX and ARG also preferred color, but to a lesser extent (66.7 % and 73.3 %, respectively) ($p = 0.006$) (Fig. 3A). Regarding the presentation of 10 or 100 faces in the graph, SP preferred the reduced option of 10 faces (57.1 %), as did ARG with 70 %, while in MEX there was no preference ($p < 0.001$) (Fig. 3B).

Regarding treatment, participants from all three countries preferred that fracture risk be presented both

with and without treatment to see the risk reduction effect: 5.8 ± 1.6 on a 1-7 scale for verbal or written communication, 5.93 ± 1.53 for the color chart, and 5.39 ± 1.84 for faces.

When asked about the consequences of having a fracture, participants were shown drawings to select the order of what concerned them most (Fig. 4). SP patients were most concerned about loss of independence (46.4 %), while in MEX, it was the loss of quality of life (36.1 %), and in ARG, it was the possibility of kyphosis (33.3 %) (Table II).

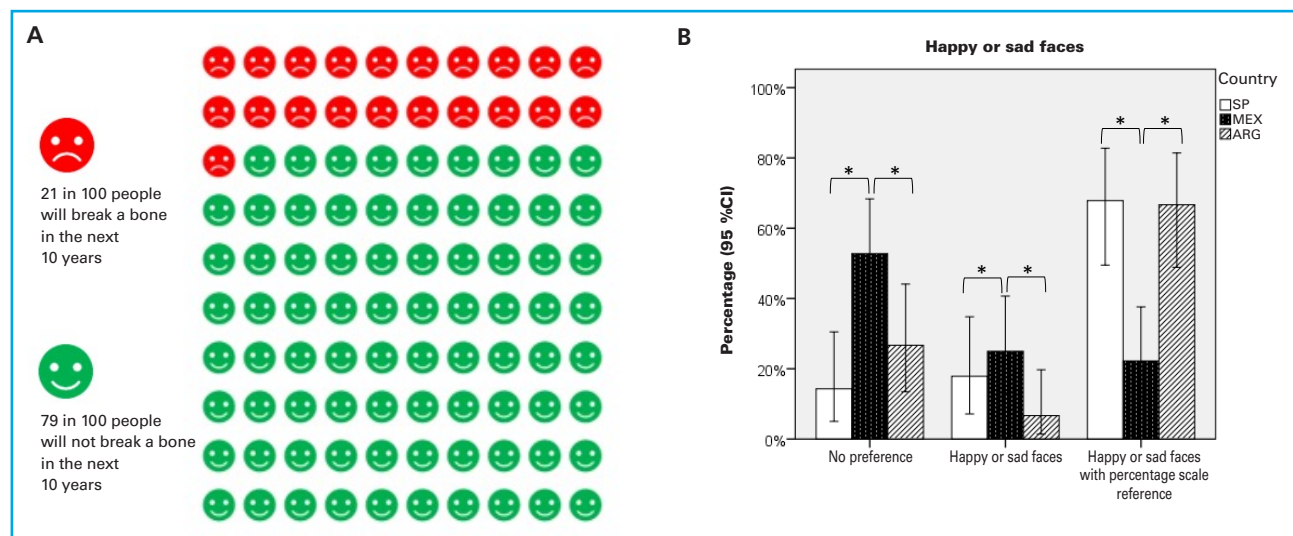
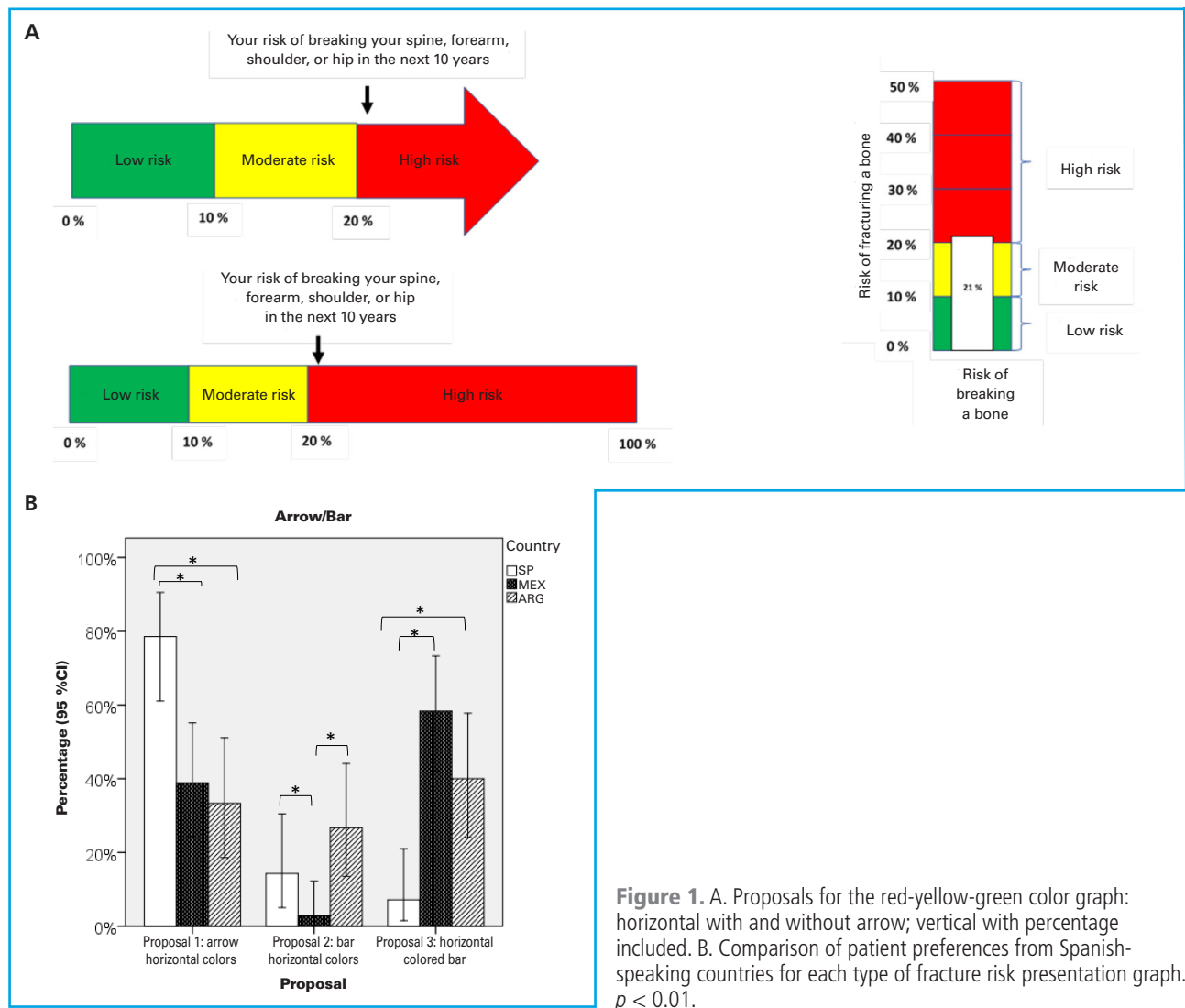
In all three countries, great importance was placed on receiving a verbal explanation of fracture risk supported by graphics: SP 75 %, MEX 86.1 %, and ARG 83.3 %. They also valued receiving printed information on paper: SP 77.5 %, MEX 80.6 %, and ARG 83.3 %.

DISCUSSION

Clinical practice guidelines, such as those from the Spanish Society of Bone and Mineral Metabolism Research (SEIOMM), recommend treatment based on fracture risk (12). It is therefore important to know each patient's specific fracture risk and provide proper information for a shared decision on the most efficient and effective treatment.

In Spanish-speaking countries, particularly in SP and MEX, participants had received information about their fracture risk above the average in the international RICO study, where only 56 % of patients reported receiving information (11). This likely reflects a cultural characteristic of greater verbal communication in Spanish-speaking countries. The questionnaire itself showed the preference in these three countries for receiving information in a graphic and printed form, but also explained verbally by the doctor or nurse. However, the goal of communicating the risk of new fractures to patients with OP should approach 100 %, as demonstrated in the survey. Receiving adequate information was a highly relevant issue for all patients in the study.

An important issue worldwide regarding OP is the difference between the percentage of patients who have had a fracture and those who actually receive treatment to prevent new fractures due to fragility (13). While treatment is recommended after a fracture, recent or past, representing a high or very high fracture risk, the reality in the international RICO study showed that in some countries, such as the United States (California) and Belgium, the percentage of patients not receiving treatment was > 70 %. In SP, this discrepancy was not observed. On the contrary, a higher percentage of patients were on treatment than those with a history of fractures, likely because 100 % of participants were diagnosed with OP.



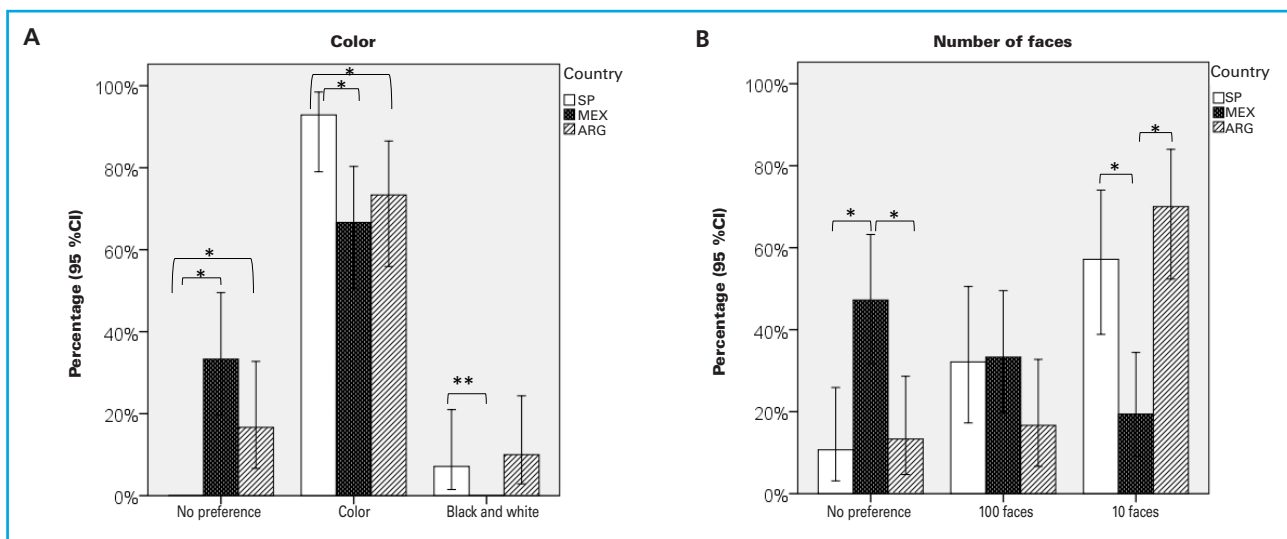


Figure 3. A. Comparison of patient preferences from Spanish-speaking countries for the type of “happy” or “sad” face graph, in color or black and white, for fracture risk presentation. $p < 0.01$. B. Comparison of patient preferences from Spanish-speaking countries for the type of “happy” or “sad” face graph, with 100 or 10 faces for fracture risk presentation. $p < 0.001$.

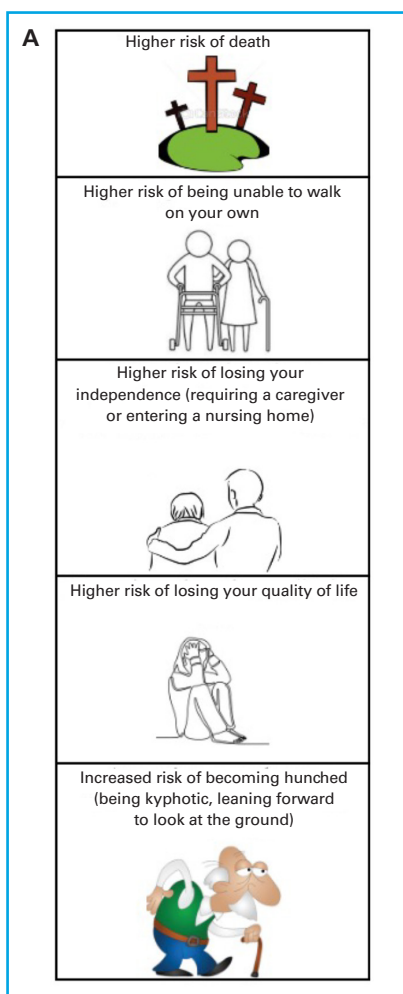


Figure 4. Representative drawings of the consequences of having a fracture.

Table II. Importance of potential consequences of having a fracture for Spanish-speaking participants

Consequence	MEX	ARG	SP
Death	19.4 %	20 %	25 %
Inability to walk	25 %	16.7 %	3.6 %
Loss of independence	16.7 %	16.7 %	46.4 %
Loss of quality of life	36.1 %	13.3 %	17.9 %
Kyphosis	2.8 %	33.3 %	7.1 %

In MEX or ARG, this figure was around 70 %. Despite having a lower incidence of fragility fractures vs countries in Northern Europe (13,14), SP still has a higher proportion of patients with OP who are susceptible to treatment vs those receiving treatment. According to the recent Scope 2021 study, SP is the country with the most significant increase in this aspect compared to other European countries (14).

Regarding preferences for the graphical presentation of fracture risk information, it is noteworthy that SP participants preferred a combination of color arrows and percentage, while MEX and ARG preferred a simpler traffic light option without arrows or percentages.

Of note that in most cases, MEX patients' preferences were quite different from those of SP patients. On the other hand, ARG patients had preferences that were very similar to those of the Spanish participants. This demonstrates that each country has its own peculiarities, independent of language and geographical proximity.

It is clear, however, that visual communication methods are greatly appreciated by all patients, especially when using icons that are easy to interpret.

Decision support tools for osteoporosis have been developed over the years (15). Recently, a Dutch group developed a validated decision aid tool specifically designed for Fracture Liaison Services (16). This tool includes the assessment and communication of fracture risk through a brochure explaining the disease of OP, its consequences, dietary advice, lifestyle, and treatments. This documentation, which is given to patients, also provides general fracture risk information using broken bone figures, similar to the “happy” faces presented in the RICO study.

Information about OP in the form of brochures or digital formats is common in primary care and specialized care; however, specific information about fracture risk is less common (17). FRAX is the most widely used tool, but it is not designed for patient communication and is often difficult to understand (18). Therefore, it is important to develop new patient support tools that offer visual aids to help them understand their risk of future fractures. It is also crucial to explain to patients how much this risk will be reduced with the proposed treatment to achieve greater therapeutic adherence (19).

The RICO study has limitations. On the one hand, it was conducted during the COVID-19 pandemic, which meant that some interviews with participants were held virtually, potentially influencing some responses. In SP, all interviews were conducted after the period of strictest restrictions and were held in person, while in MEX and ARG, the interviews were mixed. Moreover, the inclusion of patients already diagnosed with OP may have influenced results such as treatment, as many of them were likely more sensitized to receive treatment to prevent further fractures. Another limitation is the scope of the study, which, being international, included participants from different cultures and, in particular, different health care systems. Among Spanish-speaking countries, the public system with medication funding in ES differs from that in MEX, where coverage is not universal, and in ARG, where private healthcare predominates over public. However, this would not affect issues such as knowledge of the disease, fracture risk, or consequences. It could, however, influence the decision not to receive medication until the patient sees that their risk is very high to avoid high financial spending.

CONCLUSIONS

The RICO study demonstrates that there is a deficit in transmitting information to OP patients about their fracture risk. Spanish-speaking patients showed different

preferences in presenting the graphs. In particular, MEX patients showed preferences opposite to those of SP patients. The results suggest that healthcare professionals need to make an effort to find effective communication methods about fracture risk that are adapted to the cultural idiosyncrasies of the population being treated. Establishing effective doctor-patient communication tools could increase treatment acceptance and likely improve the quality of life for patients with OP.

COAUTHORS OF THE RICO STUDY

Mitali Sharma (The OMC Research Center. Beverly Hills, California. USA), Patricia Clark (Clinical Epidemiology Unit. Hospital Infantil de México Federico Gómez - Faculty of Medicine. Universidad Nacional Autónoma de México (UNAM). Mexico City, Mexico), Saeko Fujiwara (Pharmacy Service. Yasuda Women's University. Hiroshima, Japan), Jonathan D. Adachi (McMaster University. Hamilton, Ontario. Canada), Osvaldo D. Messina (IRO Medical Center. Rheumatological and Osteological Research SRL. Buenos Aires, Argentina), Suzanne N. Morin (Medicine Service. McGill University. Montreal, Canada), Lynn A. Kohlmeier (Spokane Osteoporosis and Endocrinology. Spokane, Washington. USA), Caroline B. Sangan (Royal Osteoporosis Society. Bath, United Kingdom), Griselda Adriana Cruz Priego (Clinical Epidemiology Research Unit. Hospital Infantil de México Federico Gómez - Faculty of Medicine. Universidad Nacional Autónoma de México (UNAM). Mexico City, Mexico), Andrea Cavallo (IRO Medical Center. Rheumatological and Osteological Research SRL. Buenos Aires, Argentina), Fiona Cooper (Royal Osteoporosis Society. Bath, United Kingdom), Jamie Grier (Royal Osteoporosis Society. Bath, United Kingdom), Carolyn Leckie (McMaster University. Hamilton, Ontario. Canada), Diana Montiel-Ojeda (Clinical Epidemiology Research Unit. Hospital Infantil de México Federico Gómez - Faculty of Medicine. Universidad Nacional Autónoma de México (UNAM). Mexico City, Mexico), Alexandra Papaioannou (McMaster University. Hamilton, Ontario. Canada), Nele Raskin (Health Services Research Department. CAPHRI Care & Public Health Research Institute. Maastricht University. Netherlands), Leonardo Yurquina (AMPC, Hamilton. Ontario, Canada), Michelle Wall (Research Institute of the McGill University Health Centre. Montreal, Quebec. Canada), Olivier Bruyère (WHO Collaborating Center for Musculoskeletal Health and Aging Epidemiology. Public Health Division. Epidemiology and Health Economics. University of Liège. Belgium), Annelies Boonen (Internal Medicine Service. Division of Rheumatology. Maastricht University Medical Center. Maastricht, Netherlands), Elaine Dennison (MRC Life Course Epidemiology Centre. University of Southampton. Southampton, United Kingdom), Nicholas C. Harvey (NIHR Southampton Biomedical Research Cen-

tre. University of Southampton and University Hospital Southampton NHS Foundation Trust. Southampton, United Kingdom), John A. Kanis (Bone Metabolic Diseases Center. University of Sheffield. Sheffield, United Kingdom), Jean-François Kaux (Department of Physical Medicine and Rehabilitation, and Sports Traumatology. University Hospital of Liège. Belgium), E. Michael Lewiecki (New Mexico Clinical Research & Osteoporosis Center. Albuquerque, New Mexico, USA), Óscar López-Borbón (The OMC Research Center. Beverly Hills, California. USA), Zoé Paskins (Haywood Academic Rheumatology Centre. Midlands Partnership University NHS Foundation Trust. Stoke-on-Trent, United Kingdom; Cedars-Sinai Medical Center. Los Angeles, California), Jean-Yves Reginster (WHO Collaborating Center for Musculoskeletal Health and Aging Epidemiology. Public Health Division. Epidemiology and Health Economics. University of Liège. Belgium).

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