ECONOMIST IMPACT



Integrated Care Pathways for Bone Health: Brazil

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The burden of poor bone health

Brazil's population over 60 years of age is estimated to reach approximately 30% of the total population by 2050, a higher rate than the projected world average.¹ As the country's population rapidly ages, Brazil's burden of poor bone health will increase.² By 2025, the country could have the sixth-largest elderly population in the world, of which a significant share would be affected by osteoporosis.³ Preventing and treating the occurrence of osteoporotic conditions is therefore critical.^{4,5} Figure 1 shows the frequency and distribution of falls reported by Brazilian men and women over 40 years old by region.

Poor bone health imposes severe physical, psychosocial and financial burdens on both the individual and society.⁵ Though poor bone health encompasses a broad spectrum of diseases, it is most often quantified as the cumulative burden of osteoporosis and osteoporosis-related fractures. Osteoporosis is characterized by low bone mineral density (BMD) or the deterioration of bone tissue⁵ and it is the most widespread bone disease worldwide.⁷ Osteopenia often signals an early stage of osteoporosis, and many osteopenic individuals are at a high risk of suffering osteoporotic fractures (fractures that would not typically break a healthy bone), which could even lead to death.⁷ This paper employs the terms *osteoporosis-related fractures* and *osteoporotic fractures* as opposed to *fragility fractures* to avoid the stigma that often accompanies the term *fragility*.

In addition to the health consequences of poor bone health, the high incidence of osteoporotic fractures costs both patients and society tremendously. Treatment, surgeries, hospital stays and rehabilitation expenses stress the public healthcare system and household budgets.8 According to experts, the Unified Health System (Sistema Único de Saúde [SUS]) is expected to be overloaded with bone disease patients, which could lead to a collapse in hospital capacity. SUS is responsible for financing the health expenses of more than 160 million Brazilians (75.2% of the total population)9, including medication—a significant portion of public health expenditure.¹⁰ According to experts from the webinar, the Ministry of Health's spending on bone health related treatment amounts to 10.4% of the total budget for high-cost specialized medicines.

The magnitude of the economic burden due to poor bone health is made even more clear when looking at specific populations. For instance, researchers examined women aged from 36 to 93 years old (mean age was 64.8) and over who were using high-cost medications provided by SUS to treat postmenopausal osteoporosis. The average monthly per capita expenditure in the first year of treatment was about R\$260, gradually increasing with age, and the expense was 55.8% higher for women who had suffered an osteoporotic fracture compared with those who had not.¹¹ The annual economic impact of fractures for health insurers was estimated to be nearly R\$30 million. Moreover, direct costs of hospitalisation for osteoporotic fractures in private hospitals were around R\$60,800 per patient.^{11,12}

These findings provide us with a glimpse of the extent to which the costs of poor bone health currently burden the healthcare system and patients alike. Experts believe that if governments and civil society do not act, this burden will only increase, given the projected demographic changes in the country. While there have been government efforts to address this issue in the past, the necessary changes are not easily implemented and can take generations to realise impact.



FIGURE 1. Frequency and distribution of falls reported by Brazilian men and women over 40 years old, by region⁶

Main gaps in the Brazilian bone health environment

Osteoporosis is a silent and progressive disease; many people are unaware they have it until a fracture occurs. Late diagnosis burdens both patients and health systems since patients require more care and experience poorer outcomes when treatment begins later. Further, a previous fracture doubles the risk of a subsequent fracture,⁶ so patients are more likely to suffer additional health consequences, including an increased risk of death. Between 15-30% of hip fracture patients die within the first year after injury due to complications such as infections, venous thrombosis and cardiovascular disease.⁶

Many primary care physicians lack preparedness, due to a lack of training in risk factors and preventive practices for osteoporosis and related conditions, which also contributes to late diagnosis.⁵ Poor continuity of care hinders the efforts of tertiary care when a fracture is being treated because providers are incapable of fully addressing the underlying causes and thus cannot prevent further fractures from occurring.⁵

Multidisciplinary teams create an integrated care pathway in which health professionals at all levels are involved.⁵ Strategies for improving bone healthcare include integrating primary and secondary care, improving coordination and comprehensiveness of care delivery and offerings (such as pharmacological and nonpharmacological approaches to improving bone health outcomes), and considering social determinants of health.⁵ SUS, in particular, could benefit from greater coordination among the different levels of care to address the late and low diagnosis rates, and corresponding undertreatment rates.

A significant gap in the system is the availability of bone mineral density (BMD) testing, one of

the most widely used tools for detection and intervention even before a fracture occurs.⁵ However, BMD testing is still very sparse in Brazil; the supply of instruments is low, the cost for patients and the government is high, and awareness and utilisation of these tools among providers is inadequate.⁵

Economist Impact analysis found that Brazil's large size and diversity aggravate its deep regional inequalities, since the highest GDP per capita and technological development rates are concentrated in the South and Southeast of the country, complicating the implementation of standardised procedures and guidelines for all health centres and professionals. The policies developed by the Ministry of Health or its state counterparts must be broad enough to apply in both urban and remote areas. When public health is managed by the municipality, budget issues quickly become a problem in the treatment of osteoporosis. Resources for health are scarce which means having BMD testing in all SUS health facilities is difficult.

Experts from the webinar recommend the utilisation of the Fracture Risk Assessment Tool (FRAX) as an alternative to BMD to help identify those at greatest risk of osteoporotic fractures. FRAX calculates an individual's risk of fracture based on a series of inputs such as body mass index, prior fracture, age and family history, with no need of BMD results. However, widespread implementation of this tool can be complicated in rural areas and other settings where providers often lack training to use it. Training in all regions of the country, particularly among primary care providers and nurses, could maximise the use of cost-saving and preventive tools like FRAX while reducing the need for formal BMD testing.

Public–private sector inequalities also affect treatment outcomes. A study carried out in São Paulo observed that the prevalence of bone diseases was higher among patients with private health insurance compared to patients in the public sector, regardless of age and gender differences due to one's financial situation and broader access to diagnosis.¹³ This reinforces the need for expanded access to diagnostic methods and a better understanding of bone health across health systems.

Brazil lacks a clear prevention strategy for bone disease, which contributes to the overload of SUS units. Public policies could aim to educate the general population about bone health and related diseases.² Failing to do so could further exacerbate the economic and health burdens.

The future of bone health in Brazil

Developing integrated care pathways to improve bone health aligns with the World Health Organisation Decade of Healthy Ageing 2021-2030 strategy.^{14,5} The components of the care pathway in Brazil should focus on:

Censuses for populations at risk. BMD testing should be considered a priority. However, budget constraints, along with regional inequalities and differences, make it nearly impossible to effectively implement BMD testing in every region.⁵ Therefore, municipalities must identify high-risk populations and focus diagnostic efforts to maximise resource allocations. Local administrations can estimate the percentage of the population at risk by means of censuses and focus their preventive actions, such as physical activity, preventive medicine or mineral supplements.

Clinical training programs for healthcare

professionals. Clinical training must be improved to give health professionals the tools to assess the risk of osteoporotic fracture.⁵ However, the numerous competing demands of nurses and primary care physicians in the public health system make it a challenge for the Ministry of Health to guarantee clinical standards among these providers across the country. Thus, this responsibility must be shared with state governments to formulate, implement and monitor programs that are better suited to the challenges and conditions of local environments.

Public awareness campaigns on bone health.

Brazil should conduct public awareness campaigns to NGOs, civil associations, regional governments and the general population in order to disseminate knowledge about the importance of preventing poor bone health to ultimately minimise the future health and socioeconomic burden of the disease. Sharing information about the risks and the possibilities for prevention and treatment would help to contribute to a reduced burden for generations to come.

Multidisciplinary teams for secondary care of bone health. An integrated care pathway would use teams of health professionals including pharmacists, physiotherapists and nurses to cover all the activities associated with the treatment of poor bone health, including prevention of further fractures.⁵ Economist Impact analysis shows that SUS can benefit from its scale with different levels of care to create an integrated pathway in the country that meets every patient's needs.

About this paper

Economist Impact undertook a global research program, sponsored by Amgen, in 2019 entitled *Integrated Care Pathways for Bone Health: An Overview of Global Policies*. This paper is a synthesis of key insights from a webinar and additional desk research conducted independently by our team, focused on applying insights from the global study within the Brazilian context.

The research was conducted by the Economist Impact team. Economist Impact bears sole responsibility for the content of this briefing paper. The findings and views expressed in the briefing paper do not necessarily reflect the views of the sponsor. The research for this paper was led by Amanda Stucke and Chandrika Bagchi, with inputs and analysis from Marcio Zanetti, Carolina Zweig and Giulia Garcia. This briefing paper was written by Mateus Getlinger with contributions from Giulia Garcia and was edited by Melissa Lux.

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