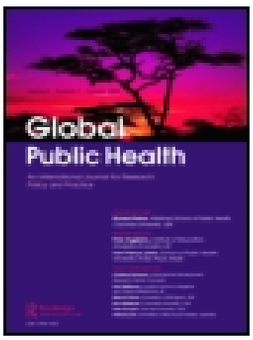

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A look into the challenges and complexities of managing low back pain in Mexico

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ABSTRACT

Low back pain is a global health problem. In Mexico it is one of the most common musculoskeletal conditions as well as the leading cause of disability. This review provides an overview of the challenges and complexities of managing low back pain in Mexico. It begins with an explanation of the Mexican healthcare system and an overview of the burden of low back pain. Usual care for low back pain in Mexico is then contrasted with recommended best practice care to highlight common evidence-practice gaps and drivers of poor care. Finally, solutions are proposed based on positive experiences from other countries. Delving into the Mexican health framework and the burden of low back pain will provide a better understanding of why it is important to pay attention to this musculoskeletal disorder. Potential steps required to reduce the burden are also outlined to benefit not only the people suffering from low back pain but also the Mexican economy and society.

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Health care system; low back pain; Mexico; burden; musculoskeletal disorders

An overview of the Mexican health system

The healthcare system in Mexico is tripartite, divided into public, social insurance, and private health services (Mesa, 2012). Social security and public health care are segmented; public health-care services comprise a complex net of diverse institutions. In contrast, the private health-care sector consists of private insurance providers, private practices, and hospitals (Gómez et al., 2011) (Figure 1)

Mexicans do not have choice on the insurance plan or provider network they are involved with; this is decided according to their job (Mexico, 2016*: OECD Reviews of Health Systems*). Apart from health insurance, the social security package includes retirement and disability pensions, unemployment benefits, childcare services, and a housing fund (van Gameren, 2010). Health services are funded by workers, employers and government contributions. On the other hand, the Ministry of Health provides health-care services to Mexican citizens who do not have a formal employment contract (e.g. the self-employed, urban workers in the informal sector and the rural population) (Mexico, 2016*: OECD Reviews of Health Systems*).

The number of people with some form of health coverage greatly increased following the implementation of *Seguro Popular*. In 2016, 86% of the Mexican population was covered by some healthcare scheme (Gobierno de los Estados Unidos Mexicanos, 2018). Nevertheless, this did not mean that the services were fairly provided, as it is essential to consider the quality, access, and

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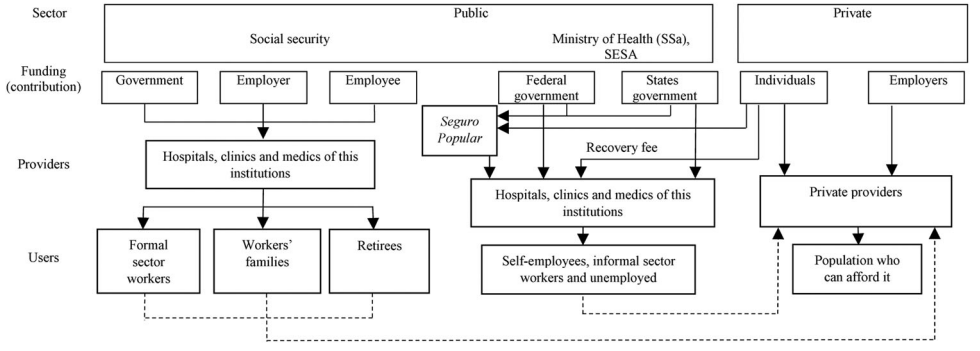

Figure 1. Health care system framework (Gómez et al., 2011). Figure adapted from *Sistema de Salud en México* (Gómez et al., 2011).

information regarding healthcare services between different populations. In Mexico, healthcare is fragmented. Each group of sub-systems provides distinct levels of care, to different clusters, at unequal prices and disparate outcomes (Mexico, 2016*: OECD Reviews of Health Systems*). From 1 January 2020, *Seguro Popular* has been replaced by *Instituto de Salud para el Bienestar*. The latter stewardship entitles every person living in Mexico, including non-citizens, to universal and free health coverage and is focused on primary care (Secretaría para el Bienestar, 2020a, 2020b). People no longer need to affiliate or pay an annual fee. They only require to be on Mexican territory, not being affiliated to another healthcare system and show either their ID or birth certificate (Secretaría de Salud, 2018). For 2020, the proposed health total budget was 653,206 MMDP (29,031,378 dollars), 2.49% BIP (Cámara de Diputados, 2019)

In the public sector, access to specialist medical care only occurs following a referral from a primary care physician, who acts as a gatekeeper and ensures that patients are referred to specialists for conditions that could not be managed by a general practitioner (Greenfield et al., 2016). In contrast, those who can afford private healthcare are able to access a specialist in the first instance either by paying privately for a specialist or by a membership of a private health insurance plan (Consejo Nacional de Evaluación de la Política de Desarrollo Social, 2018). Private health insurance is uncommon in Mexico. In 2016, <1% of the population reported being affiliated to private health insurance (Consejo Nacional de Evaluación de la Política de Desarrollo Social, 2018).

The burden of low back pain in Mexico

Similar to what has been observed in other middle-income countries such as Brazil (Ferreira et al., 2019), Mexico is undergoing an epidemiological transition, so that now non-communicable diseases are the largest contributor to disease burden (Córdova et al., 2008). This change is due to the ageing population and changes in lifestyle, diet, and increasing obesity rates, placing Mexicans at greater risk of non-communicable diseases, such as musculoskeletal disorders (March et al., 2014). In Mexico, musculoskeletal disorders rank 2nd in terms of disease burden (years lived with disability) (GBD, 2017) with low back pain being the largest contributor to the burden of musculoskeletal conditions. Both low back pain and neck pain contribute with 3.6% of total disability-adjusted life years caused by musculoskeletal disorders countrywide (Clark et al., 2018).

Low back pain is a very common symptom in Mexico. The *Instituto Mexicano del Seguro Social* reported that low back pain ranks 8th in terms of primary care seeking with 907,552 consultations (13%) of the total in 20–59 ages and 25% in adults over 60 years old (División Técnica de Información Estadística en Salud, 2003; Macías et al., 2014). In a cross-sectional study ($n = 3022$) low back pain also ranked 8th in terms of care seeking (1.9%) and 3.7% were referred to secondary and tertiary

care (Martínez et al., 2015). In the state of Tabasco, low back pain is one of the main reasons to request medical attention. It is one of the 20 most common reasons for consultation in adults over 20 years old, and one of the 20 most common reasons for temporary disability (Zavala et al., 2010).

Few studies have estimated the prevalence of low back pain in Mexico. A population-based survey of 8,159 individuals in Mexico City and Nuevo Leon in 2011 reported the prevalence of back pain in the last 7 days to be 8.0% (95% CI 7.5–8.7) and 69.1% reported experiencing back pain in the past (Pelaez et al., 2011). Other epidemiological data on low back pain in Mexico are limited due to the absence of methodologically high quality studies using standardised definitions and criteria (Garcia et al., 2014).

Loss of productivity due to sick leave and early retirement due to low back pain are also a concern for the Mexican economy and society. A study of workers in Northern Mexico ($n = 2,566$) reported that 1,077 (41%) of them experienced back pain, 48% of them required medical attention ($n = 517$), and 13% were absent from work for an average of 12 days (Saldívar, 2003). Chronic low back pain represented 10% to 15% of all disability claims during a seven-year period (Noriega et al., 2005). Low back pain in Mexico is costly as the population who suffers from low back pain are mostly workers or potential workers. Costs estimates are on average 1744 dollars per patient including sick leave ($1084), imaging ($395), consultation ($180), drugs and laboratory (Martinez et al., 2013).

Recommendations for low back pain management from Clinical Practice Guidelines

Guidelines recommend that patients with low back pain of spinal origin be classified into one of three categories: (i) serious spinal pathology such as fracture or cancer, (ii) radicular syndromes including sciatica and spinal canal stenosis and (iii) non-specific low back pain. The label 'non-specific low back pain' is used when the cause of the pain cannot be determined (Maher et al., 2017). As most cases are not due to serious pathology, clinical practice guidelines recommend that patients with low back pain should be managed in primary care. Table 1 presents the key best practice messages common to most national guidelines as outlined in the recent Lancet Low Back Pain Series (Buchbinder et al., 2018; Foster et al., 2018; Hartvigsen et al., 2018). Imaging should be reserved for patients for whom the result is likely to change management. Greater emphasis is placed on self-management, physical and psychological therapies, and some forms of complementary treatments such as spinal manipulation. Less emphasis is put on pharmacological and surgical treatments. Guidelines encourage active treatments that address psychosocial factors and focus on

Table 1. Concordance of key messages from the Lancet Low Back Pain Series (Buchbinder et al., 2018; Foster et al., 2018; Hartvigsen et al., 2018) with recommendations from the Mexican guideline (Guevara et al., 2011).

Lancet series messages	Message articulated in Mexican guideline?
Low back pain should be managed in primary care	
Remain active	✓
Stay at work	×
Imaging should only occur if the clinician suspects a specific condition that would require different management to non-specific low back pain	✓
First choice of therapy should be non-pharmacological	×
Most guidelines advise against electrical physical modalities (e.g. short-wave diathermy, traction)	×
Due to unclear evidence of efficacy and concerns of harm, the use of opioid analgesic medicines is now discouraged	×
Interventional procedures and surgery have a very limited role, if any, in the management of low back pain	✓
Exercise is recommended for chronic low back pain	✓
A biopsychosocial framework should guide management of low back pain	✓

improvement in function. Management of low back pain also depends on whether low back is acute (<6 weeks) or persistent (>12 weeks) (Foster et al., 2018).

Low back pain management in Mexico

Healthcare for low back pain in Mexico includes conventional medical therapies, complementary and alternative medicine provided by homeopaths and acupuncturists as well as traditional therapies such as *curanderos* (folk healers), *yerberos* (cure with medicines extracted from plants), *hueseros* (bone setter, folk chiropractor) (van Gameren, 2010) and *espiritistas* (soul healers) (Sandberg, 2018). For example, a systematic qualitative analysis reported that back pain was the most common musculoskeletal disorder treated by *sobadores* (masseurs) (31.9%) in Mexico (CONEVAL, 2014; Sandberg, 2018). The belief that 'Air pain' could result in low back pain when people make a sudden movement such as leaping or lifting is present among a small number of Mexicans (Sandberg, 2018), and some claim that the problem created by 'air pain' (air introduced suddenly in the body) could be fixed by therapies with unknown efficacy, such as cupping. Even though culturally imbedded beliefs about the causes of illness are still held by some Mexicans, particularly in those belonging to vulnerable groups such as immigrants (Sandberg, 2018), those beliefs are not reckoned to be widely held beliefs as only few clusters rely on them. Considering these beliefs would be important when treating this people to have a better understanding of how they recognise the nature of low back pain is.

The Mexican Clinical Practice Guideline

The most recent Mexican guideline for the management of low back pain was published in 2011 and its recommendations are compared to the key recommendations from the Lancet Low Back Pain Series in Table 1 (Guevara et al., 2011). For some aspects of care the Mexican guideline provides similar advice to other national guidelines, e.g it advises against bed rest and routine imaging (Oliveira et al., 2018). The guideline endorses a clinically informative red flag (history of malignancy) (Verhagen et al., 2017). However, there also are uninformative red flags outlined (e.g. HIV) which may encourage unnecessary testing and result in harms associated with overdiagnosis (Maher et al., 2019).

Contrary to most national guidelines, the Mexican low back pain guideline still endorses opioids and paracetamol as pain medicines for back pain, as well as ineffective physical therapy treatments such as back belts, diathermy, ultrasound, traction and TENS. Perhaps more worryingly, therapies that have been proven to be beneficial, such as patient education and advice to maintain normal activities, have been omitted from the Mexican guideline. This pattern of findings suggests that there is an urgent need to update and revise the Mexican guideline so that it aligns with current evidence on the best practice management of low back pain.

One study has examined clinicians' awareness and knowledge of the Mexican low back pain guideline. A survey of 56 physicians in Tijuana found that although all reported that they see patients with low back pain, only 49% know of the Mexican guideline and only 5% consulted the guideline regularly. The physicians also performed poorly on a quiz to test their knowledge of the guideline, with an average total score of 41% (Ruiz et al., 2014). Given the limitations in the current Mexican guideline it is hard to judge if the lack of awareness and knowledge is a good or bad thing.

Steps required to reduce the burden of low back pain in Mexico

Coordinated efforts and initiatives from researchers, policy-makers, universities, professional associations, and clinicians are urgently needed to reduce the burden of low back pain in Mexico. There are also opportunities for schools and the workplace to play a role in encouraging good back health. Effective and affordable strategies that are supported by best available evidence should be implemented for prevention and treatment of low back pain. To make progress in a timely and

cost-effective manner, these efforts could be guided by research evidence and guidelines generated in other countries. There would however be a need to adapt this information to the local context when developing models of health service delivery appropriate to Mexico.

Table 2. Potential solutions to tackle hurdles and unmet needs of managing low back pain.

Hurdles and unmet needs	Potential solutions
Improve knowledge of low back pain among clinicians and patients A large proportion of people hold harmful and iatrogenic beliefs about what low back pain is and how it should be managed. Health care providers have a strong influence on patients' orientation and behavior leading to a poor prognosis.	• Campaigns of public education such as those in Australia could improve and withdraw incorrect beliefs about low back pain. • Emphasising management of low back pain in medical training programmes in Mexico could be a place to start with. • Training clinicians to keep them up-to-date with the best evidence available about low back pain management so they know when it is necessary to refer a patient as well as avoid unnecessary care.
Increase access to the right care and discourage access to the wrong care There is an urgent need to shape healthcare delivery and rationalise coverage.	• Reimbursement and regulation are promising solutions to overcome unnecessary expenses. • Entailing the application of a guideline with information about low back pain to the Mexican setting such as the GuNFT report and the MINT trials to evaluate whether an intervention is worth funding or not. • Rationalising coverage based on robust evidence by restricting access to some procedures may save a lot of money and time to all stakeholders. • Technology could be a powerful tool to convince and commit people to self-management of their low back pain. • Educating the population at their environment regarding to prevent them from low back pain also plays an important role.
Develop feasible models of health service delivery for low back pain There is an evident undersupply of healthcare providers and scarcity of resources in relation to the population	• Cost-effective strategies to improve healthcare such as integrating care for low back pain with existing services could be a potential solution. • A strengthened and co-ordinated primary care sector is to fulfil healthcare needs
Tackle vested interests and resolve interprofessional disputes People stand to gain financially from sales of some interventions and market opposing messages	• Education initiatives could be expanded to avoid misinformation and overcome health myths. • Greater government regulation may reduce marketing of not evidence-based treatments. • Multidisciplinary team efforts could work to counteract vested interests.
Work-related disability Work is a health determinant. In the informal sector (25%) there is no regulation about weekly hours or security protection and conditions are poor.	• Boosting employment in the formal sector may benefit both economy and health. • Multi-domain workplace approaches could have a great impact on the reintegration into the workforce.
Improve data collection system and quality of epidemiological data There is a lack of epidemiological data on low back pain in Mexico, leading to a gap of knowledge.	• Improving data collections systems and population-based studies may help out to get a better understanding of why we need to pay attention to low back pain. • Conducting new studies aligned to a standardised definition may tackle the methodological weaknesses such as heterogeneity.

In Australia the federal government has given programme funding to a consortium of universities to work with consumers, professions, funders and policy-makers to improve low back pain care and outcomes. A similar initiative in Mexico would facilitate the implementation and evaluation of the potential solutions outlined below and summarised on Table 2.

Step 1. Improve knowledge of low back pain among clinicians and patients

Clinicians' misconceptions about low back pain have been shown to encourage delivery of the wrong healthcare and negatively influence patient beliefs.(Gardner et al., 2017) For example clinicians with a higher biomedical orientation are more likely to restrict return to work/activity and certification of sick leave for their patients, an approach that is discouraged in current guidelines (Daykin & Richardson, 2004; Dean et al., 2005; Werner et al., 2005). Consequently, patients may consider that they need to protect their back by resting, being careful to avoid physical activities (Darlow et al., 2015). A cross-sectional study among Mexicans with chronic low back pain associated fear attitudes and pain avoidance with a greater likelihood of poor prognosis (Nava et al., 2017). Public education campaigns such as that carried out in Australia have been shown to improve societal (both lay people and clinicians) beliefs about low back pain (Suman et al., 2020).

As with most other countries there needs to be greater emphasis on management of low back pain in medical training programmes in Mexico. Insufficient level of knowledge in the primary care setting leads to low self-confidence in underpinning decisions, which may result in referring patients to second and third levels of care without having first benefited from an evidence-based treatment (Ruiz et al., 2014). Maintaining harmonious relationships with patients and fear of litigation if an underlying serious pathology is missed could also influence unwarranted imaging (Slade et al., 2016). Existing clinicians require more training and educational support from health systems if they are to use new approaches to back pain care. Educational material (Forsetlund et al., 2009; Giguere et al., 2012) and workshops (Forsetlund et al., 2009) may have an effect on knowledge. Key topics could include emphasising the need for a history and physical examination in patients with low back pain and building skills in addressing patient concerns and requests for unnecessary care, such as imaging tests in the absence of clinical features of serious pathology (Traeger et al., 2019).

Step 2. Increase access to the right care and discourage access to the wrong care

Reimbursement and regulation are powerful tools to shape healthcare delivery and other countries provide examples for Mexico to consider. For example, Australian Medicare no longer funds spinal fusion surgery for uncomplicated low back pain (Department of Health, 2018), and the government tightly regulated stem cell clinics so they could not sell services for back pain (Government, 2019). Investment and disinvestment can be guided by health technology assessments coordinated by the *Centro Nacional de Excelencia Tecnológica en Salud,* which is the Mexican Health Technology Assessment (CENETEC, 2020). A project could be proposed to include a guideline with specific information about low back pain entailed for the application in Mexican setting. In Spain, the Guideline for Not Funding Technology (GuNFT) report includes guidelines that can be used to identify whether an intervention should be withdrawn from practice (Ibargoyen et al., 2007; Mayer, 2015). In the Netherlands, health insurers funded the MINT trials to resolve uncertainty of effectiveness of denervation procedures to guide decisions on whether the interventions should be funded in the Netherlands (Juch et al., 2017). Rationalising coverage is not exclusively an insurer or governmental responsibility. To enhance safer and optimal care, stakeholders and patient groups are increasingly involved in the process. In Norway, the Norwegian Council for Quality Improvement and Priority Setting in Health brings hospitals, primary health care actors, academics, patients and national authorities together to redefine the health care package based on robust evidence (Norwegian Ministry of Health and Care Services, 2017). The Council has been instrumental in

demonstrating that setting priorities sometimes implies restricting access to some interventions similar to what has been observed after the MINT trial.

Persuasive technology may help out with patient understanding and engagement to self-manage their non-specific low back pain. Adaptations may be necessary to the context such as disability (e.g. blindness and deafness) and socially disadvantaged populations (e.g. illiterate people). The development of a free low back pain app in Spanish that could be personalised (e.g. age, work, chronicity) with different interactive and educational material depending on the patient profile, with daily notifications or targeted reminders to perform a specific exercise or stay active could have an effect on behavioural change.

Educating children at school and workers at workplaces on the health behaviours that reduce risk of back pain and the role they can play in self managing episodes of back pain could be equally important. The Health System could be the umbrella for such a programme directing campaigns and articulating the different health systems and other Institutions as the National Health Institute, CENETEC, Education System.

Step 3. Develop feasible models of health service delivery for low back pain

In the past three decades, the Mexican population has increased from 86.6 to 126.7 million, with an annual growth rate of 1.5% (CONAPO, 2018). This growth will place additional challenges for health service delivery. It has been reported that there is an undersupply of healthcare providers and a scarcity of resources (Gómez et al., 2011). Given this context, practical cost-effective strategies to improve healthcare for low back pain are needed. Integrating care for low back pain with existing services as has been done in South Africa (Wellness, 2017) as well as community led-programmes for peer-education targeting physical activity in Nepal (Sharma et al., 2019) seem useful options to consider.

A central function of a strengthened primary care sector must be to fulfil healthcare needs, including those people with several and complex long-term conditions such as low back pain. Academic departments of primary care need to be supported in Mexican medical schools to undertake research in primary care, promote uptake of guideline recommendations that have proven to be effective, as well as teach the speciality. Mexico could consider the introduction of a system to allow all patients to register formally with a named primary care specialist, as happens in many developed countries. This would support continuous, co-ordinated care as well as allow calculation of quality indicators for specific patient groups.

Step 4. Tackle vested interests and resolve interprofessional disputes

To tackle misinformation from vested interests, whole-population education initiatives could be expanded to include information about unnecessary tests and treatments and to target condition-specific health myths. However, those manufacturers or individuals who stand to gain financially from sales of certain interventions and who market opposing messages are a powerful force (Traeger et al., 2019). Greater government regulation may be necessary to reduce their ability to market and sell health services that are not evidence-based. Efforts to counteract vested interests are likely to require sustained and coordinated support from the legislative, labour, health and government sectors (Traeger et al., 2019).

Step 5. Work-related disability

Work is essential to people and is one of the most important social benchmarks of health (Anema et al., 2013). Estimates from the last trimester of 2019 show that currently 31.3 million people in Mexico (25%) are working in the informal sector (INEGI, 2019), where workers are mostly affected by musculoskeletal and mental health disorders (Anema et al., 2013). It is well-known that in the

informal sector, weekly working hours are often not regulated, there is no social security protection, employment conditions are poor and work is low-paid. Boosting employment in the formal sector is a crucial measure to be taken not only to improve Mexico's economy but also for health promotion.

Multi-domain workplace approaches may have a positive impact on the reintegration into the workforce for musculoskeletal conditions whether two of three systems are encompassed: health-focused, service coordination, and work modification interventions could help to reduce lost time and costs for musculoskeletal or pain-related conditions (Cullen et al., 2018).

Step 6. Improve data collection system and quality of epidemiological data

Data collection systems and population-based studies should be improved in order to get a better understanding of low back pain in Mexico. At present the epidemiological data on low back pain in Mexico is very limited, with five regional studies used to build prevalence estimates for the whole country (Alvarez et al., 2011; Cardiel & Rojas-Serrano, 2002; National Institute of Public Health, 2011; Peláez et al., 2011; WHO, 2005) Significant limitations such as heterogeneity in sample size and population affects the comparability of the studies. For this reason there is a need to conduct new studies aligned to a standardised definition to overcome the methodological weaknesses.

Summary

A concerted effort to improve healthcare and outcomes for people with low back pain is likely to result in significant gains for both individuals in Mexico and society as a whole. Mexico faces major challenges and complexities to accurately address the burden of low back pain including the lack of knowledge of both patients and stakeholders. Time has come to revisit, create and disseminate initiatives to promote the right care and avoid harm.

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