SPINE20 RECOMMENDATIONS PACKS

Ensuring access to quality spine care to prevent disability throughout the world

SPINE20
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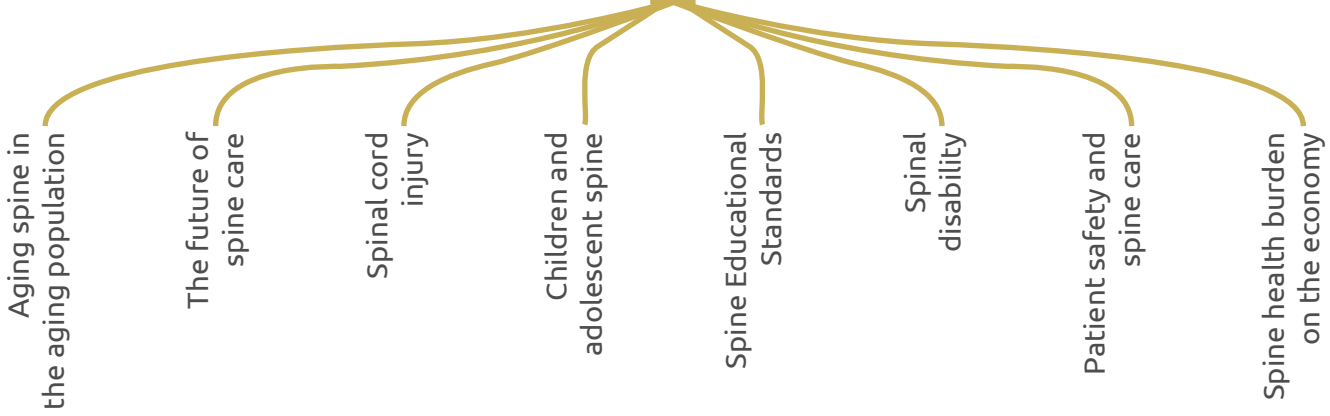
Executive summary

RECOMMENDATIONS

1. Develop policies and support systems to mitigate the increasing burden of spinal disability on health care, the economy and social security systems.
2. Examine and adopt prevention strategies to limit spine problems, including exercise incentive programs to cultivate healthy populations.
3. Promote balanced nutrition in the young population to ensure full access to vitamins and nutrients throughout childhood.
4. Encourage and support osteoporosis preventive strategies and early detection measures, particularly in the older population at risk of developing osteoporotic fractures.
5. Create global awareness for the prevention of Spinal Cord Injury (SCI).
6. Implement the principles of Value-based Health Care in spine practice to optimize spine care in the global community.
7. Support projects that improve access to quality spine care for the pediatric population, particularly in areas with limited resources.
8. Promote global access to comprehensive health care for individuals with spinal cord injury to facilitate community inclusion, return to the workforce and improve quality of life.
9. Recognize that low back pain is the leading cause of years lived with disability and loss of function in the world. Create low cost models to ensure the right care is delivered at the right time.
10. Define global standards for continuing education and training curricula for spine care practitioners that promote interprofessional collaboration and patient-centered care.
11. Recognize the need to address patient safety which requires appropriate training and teamwork in spine care.
12. Create national / global big data collections in the form of registries or other modalities so future care is based on reliable and valid research and outcome data.



Contents

1. The global economic burden of spinal disorders

Spinal disorders such as lower back pain are common and affect people of all ages, from children to the elderly. Thirty percent of adults affected experience severe disability. In fact, in 2019, lower back pain was responsible for 63.5 million disability-adjusted life years; a 47% increase since 1990, with the largest and most rapid increase in low-income and middle-income countries.[1] According to the latest data from the Global Burden of Disease Project (published in 2017), the global point prevalence of lower back pain is 7.8%, meaning that 577 million people are affected at any given time. [2]

Lower back pain is the number one cause of disability in all high-income countries, and in 27 out of 33 countries in Southeast Asia, East Asia, South Asia, and Oceania. The prevalence of lower back pain increases sharply during the teenage years – around 40% of 9–18-year-olds in high-income, medium-income, and low-income countries report having experienced lower back pain. The median one-year period prevalence globally in the adult population is around 37%, peaking in mid-life. [2,] Link1 Furthermore, disability from lower back pain is highest in the working age groups worldwide. It is the most common cause of medically-certified sick leave and early retirement in Europe and accounts for more lost workdays than any other musculoskeletal condition in the United States.

Both the development of disabling lower back pain, as well as early retirement due to chronic symptoms, is overrepresented among people with lower socioeconomic status and education attainment. For example, in Australia, the individuals who exit the workforce early due to back pain have substantially less wealth by age 65 years (AUS$5,000 vs. $340,000), even after adjustment for education. The condition contributes to the cycle of poverty and social inequality.

2. What are the major concerns?

2.1. Spine disability from back pain

The profile of human health is changing rapidly across the globe. The burden of non-communicable diseases (NCDs), particularly musculoskeletal conditions, is becoming more profound and costlier to society and all economies around the globe. NCDs are currently the largest contributor to burden of disease, accounting for 62% of total global disability adjusted life years (DALYs) and 80% of years lived with disability (YLDs). It is estimated that more than 1 billion people globally are disabled, with musculoskeletal conditions being a major contributor.[3]

Spine pain, notably lower back pain, is among the most common causes of disability and loss of function. In fact, lower back pain is the leading or next to leading cause of DALYs in the world, irrespective of economic development. The cost of lower back pain disability alone reaches 6% and above of GDP in some countries. Women, the elderly and low-income populations are the most affected. In the younger population it is estimated that 1 of 5 individuals have disabling chronic back pain that impacts quality-

of-life. These staggering numbers give an indication of the economic impact of lost human capital, lost productivity, lost work, and lost tax revenues for the community. [4]

2.2. Spinal cord injury (SCI)

Spinal cord injuries (SCIs) often result in complete paralysis of the limbs and affect patients' bowel and bladder functions. SCIs have a devastating burden on patients and their families, as well as the community. The burden is not only related to health issues – it also affects financial, emotional, and social well-being.[5] Disability due to spinal cord injuries is estimated to trigger costs ranging from USD 1.2 million to 5.1 million USD per lifetime per patient, depending on the age and the severity of the spinal cord injury. These costs are without taking into account human suffering and altered life goals. The estimated prevalence of patients with traumatic spinal cord injury in the USA is 4,187 per million population.[6]

The causes of spinal cord injuries are widely categorized into traumatic and non-traumatic spinal cord injuries. Traumatic spinal cord injuries (TSCI) include road traffic accidents, violence and falls, while non-traumatic spinal cord injuries (NTSCI) include conditions related to infections, spine tumors degenerative pathologies. One of the major challenges in spinal cord injuries is related to the variety of causes in different regions of the world. The most prevalent cause of spinal injury in the young population of high and middle income countries is road traffic accidents, while falls related to occupational injuries are a common cause in the young population of lower income counties. In the aging population, falls are the leading cause of TSCI in high income countriess. Similarly, NTSCI causes globally,where tumors and degenerative conditions are the leading cause in high-income countries, and infections (e.g. tuberculosis) are a major challenge in middle- and low-income economies. 7, Link2

Currently, a comprehensive approach involving multiple professional health care specialties is taken to ensure lifelong management of the condition and optimal outcome to return spinal cord injury victims to the community and to the workforce. There are major variations and deficiencies in the access to such a comprehensive approach, particularly in the low- and middle-income economies. Sadly, many of the spinal cord injury victims never receive a fair chance to complete their educational careers or join the workforce and earn an income. Quality-of-life can be seriously hampered with the lack of access to care.

Prevention is the best solution for spinal cord injuries, especially as no cure is currently available to reverse the resulting paralysis. Different areas of the world need prevention programs that are adapted to their specific needs, based on available data that shows the leading cause of spinal cord injuries in that particular region to make preventive strategies successful.

2.3. The aging spine in an aging population

Aging of the spine is one of the most common reasons for disability among the elderly. The prevalence of spine disorders is increasing due to the aging population. In 2012, 810 million people worldwide (11.5% of global population) were 60 years or older. This number will increase to 2 billion in 2050 (22 % of global

population). Link3The cost of disability associated with lower back pain represents up to 6% GDP in some countries and the elderly are among the most affected. The most common reasons for spinal disability in the elderly population include spinal canal stenosis, which results in walking disturbance and frequent falls, chronic lower back pain and/or osteoporosis associated with osteoporotic spine fractures.

There is a strong association between first onset osteoporotic spine fractures and developing refractures, which adds to the major health, financial burden, and disability in treating spine conditions in the elderly. Osteoporotic fractures are associated with increased mortality, particularly in the first year following the injury. Early detection of osteoporosis via prevention strategies and early detection programs prior to developing any fracture is the key factor in preventing major health events that would negatively affect the elderly individual quality-of-life and independence.

Maintaining the ability to ambulate, carry out daily activities and engage in physical activity in general are positively correlated with the general health of the older population, with particular attention to prevention of falls. Several spine conditions affect the walking ability of older individuals due to pain or loss of balance. Ensuring access to safe, effective treatment of these conditions would allow the older population to remain active in the community.

2.4. Spine disease in children and adolescents

Balanced nutrition is fundamental to spinal development and health throughout childhood, adolescence, and adulthood into old age. Prevention is one of the most important strategies in spine health, degenerative pathology, deformities, infectious diseases and traumatic pathology. It is essential that health systems promote balanced nutrition in the population to guarantee full access to nutrients and vitamins throughout childhood.

Nations must recognize that a balanced diet (through broad access to nutrients) and the fight against malnutrition, undernutrition and obesity are fundamental for the treatment of spinal disorders in childhood and adolescence. Several studies have reported a correlation between a lack of vitamins, minerals and micronutrients and the progression of spinal disorders. Obesity and excess weight are contributing factors to the increasing incidence of lower back pain and lumbar disc degeneration. Childhood obesity is rising around the world, and the World Health Organization has called it “one of the most serious public health challenges of the 21st century.» The prevalence of child and adolescent obesity is expected to surpass the prevalence of moderately and severely underweight by 2022.[8] The number of obese or overweight children aged 5 and younger climbed from 32 million globally in 1990 to 41 million in 2016, according to WHO data. Link4

If current trends continue, the number of overweight or obese children could increase to 70 million by 2025. Obesity in childhood increases the risk of back pain and reduces school activities and participation.[9] Schools need to support the screening of deformities and obesity during childhood to avoid disabling conditions. Scoliosis is a deformity of the spine that occurs in about 3% of all children (more girls than

boys). Early screening for scoliosis at school may avoid later problems such as pulmonary and heart deficiencies.[10]

3. What are the solutions?

3.1. Reliable information and valid data

The first goal is to recognize that spinal disorders that may lead to disability can be prevented or treated successfully at a lower cost with less human suffering. Spinal disorders are one of the most common ailments that reduce quality-of-life, leading to poverty and human suffering. This in turn represents a high cost to society.

The documented repercussions of spinal disability need to be recognized by governments as fact so action can be taken. One of the best ways to accomplish this is to inform governments, healthcare systems and communities through the provision of evidence-based facts on spinal disorders and costs for nations from valid and reliable sources. SPINE20 was created to advise local governments of possible solutions for mitigating spinal disorders and educate nations around the world on the importance of spine health in fighting poverty and improving well-being in the community.

Nations around the world must acknowledge on a global level that spinal disorders are an important contributor to costs, human suffering and years lived with disability. Governments, communities, and spine care clinicians must be provided with valid information to act. SPINE20 is a global community representing national and international spine societies ready to serve governments with facts and recommendations.

Recommendation

Develop policies and support systems to mitigate the increasing burden of spinal disability on health care, the economy and social security systems

Rationale:

An evolving web of evidence points to Models of Care (MoCs) as one potential solution for health systems to close gaps in evidence-based best practice and support delivery of high-value care to people with musculoskeletal conditions (including spine disability). MoCs are generally jurisdiction-specific frameworks that articulate what care people with a particular health condition should receive and how the local health system should deliver that care. MoCs are grounded in evidence, with appropriate contextual consideration around what is achievable in the jurisdiction where it is to be applied. Relevant considerations include the fiscal environment, existing health policy and health governance, local clinical expertise and the lived

experience of local communities across the jurisdiction. When implemented locally within a jurisdiction, an MoC will be adapted and operationalized for local service delivery, usually with 'must have' elements identified in the MoC as well as adaptable components that are flexible to meet local needs. Adapting and operationalizing the MoC from a system-level framework to a local model is sometimes referred to as the 'Model of Service Delivery'. [11], Link5

3.2. Spine educational standards

Pre- and post-graduate education for health professionals is strongly recommended as a priority for all countries.[12] For spine practitioners, continuing education is of particular importance, since knowledge advances at a fast pace and treatments frequently involve a multi-disciplinary team with interprofessional and patient-centered care based on evidence Link6.

On the other hand, resources must be managed in a rational way, and spine care must be provided according to evidence-based and value-based principles, optimizing outcomes and costs.[13] Hence, the importance of defining standards for continuing education of spine practitioners in an interdisciplinary setting cannot be overemphasized. These standards must recognize and incorporate the skills and attributes of individual professions, best evidence, patient values and options, and available resources.

Recommendation

Define global standards for continuing education and training curricula for spine care practitioners that promote inter-professional collaboration and patient-centered care

Rationale

Spine-related problems represent an enormous economic and human cost to patients, their families, and communities. Recognition from governments of the impact of spinal disability and better education of primary care practitioners and public health workers will help reduce disability caused by lower back pain.

Worldwide, particularly in more developed countries, a substantial number of resources is allocated to the education and training of surgeons to teach them how to operate on spine pathologies. However, only a very small minority of spinal conditions require surgery. Conversely, most patients with benign – but often highly disabling – spine conditions consult different healthcare professionals who propose a variety of treatments, a large portion of which are ineffective, not evidence-based and consume considerable resources.

Continuing education is in demand in all professions, but it is of particular importance in health sciences to ensure that professionals maintain their skills and competencies, while they learn about new and

developing areas in their field.[14] Each professional must understand their role within the team and align with the treatment goals, in such a way as to convey a coherent message to the patient.[15] Thus, developing education programs and opportunities to promote and facilitate shared learning between spine practitioners is a key element in reaching this goal.

To maximize effectiveness and optimize resources, however, intervention plans must be evidence-based, value-based, and centered on the needs of the individual as patient while taking into account the skills and attributes of healthcare professionals. Continuing education in an inter-professional environment is therefore imperative to ensure the best healthcare for patients with spinal problems. This would be best done by defining global educational standards and training curricula for spine practitioners and adapting them to local/regional resources and needs.

3.3. Prevention of disability

3.3.1. Lower back and neck pain

Public health is a critical part of the larger concept of health systems. It has been defined as "what we as a society do collectively to assure the conditions in which people can be healthy" link 7. The goal of public health is to improve health outcomes for populations by achieving the following objectives:

» Prevent disease and the health consequences of environmental hazards and natural or man-made disasters

» Promote behaviors that reduce the risk of communicable diseases

However, the public health system has long ignored the problem of spine pain. SPINE20 is calling for the public health system to get involved in the prevention of disability and loss of function from lower back pain, the leading cause of years lived with disability (YLDs) worldwide.[3]

An important preventative measure in spine health is exercise. Evidence shows that physical activity and exercise reduce the severity of lower back pain and maintain function. Physical activity improves spine health, musculoskeletal health, the cardiovascular system, and the mood and well-being of the individual. Physical activity is not just a public health issue; it also addresses the well-being of communities, protection of the environment and investment in future generations. [16]

Recommendation

Examine and adopt prevention strategies to limit spine problems, including exercise incentive programs to cultivate healthy populations

Rationale:

Lower back pain affects 80 to 90% of the adult population in industrialized and emerging countries. Men and women are equally afflicted by lower back pain during their most productive years (30 – 50 years of age). Evidence suggests that 30% of affected individuals experience disability and loss of function. Lower back pain is becoming more prevalent in the growing elderly population. It is a threat to healthy aging and is often the primary cause for loss of quality-of-life.[17] Chronic lower back pain leads to loss of function, ability to work, poverty and the ability to provide for oneself, the family, and the community. Nations need to recognize that lower back pain is one of the world's leading causes of years lived with disability and loss of function.[18]

Like other non-communicable diseases, the burden of disability related to back and neck pain will likely increase during and after the COVID-19 pandemic. Therefore, investing in public health – including occupational programs to prevent disability by promoting education and physical activity – must be a priority, coupled with system-level support, funding models and policy. The World Health Organization can help facilitate the adoption and implementation of evidence-based, affordable, and accessible interventions for rehabilitation in people with lower back pain with system-level support and policies.

An international review of randomized clinical trials showed that exercise performed two to three times/ week, including strength training and either stretching or aerobic exercise, can prevent lower back pain disability – the number one cause of disability worldwide.[1]

According to the WHO, one in four adults are not physically active. Perhaps even more alarming, eight out of ten adolescents are not physically active. Link8, Link9 Physical inactivity costs health care systems USD 54 billion worldwide, with productivity losses of USD 14 billion, and 13.4 million disability-adjusted life years.[19]

Recognize that lower back pain is the leading cause of years lived with disability and loss of function in the world. Create low cost models to ensure the right care is delivered at the right time.

Rationale:

In 2017, the World Health Organization's "Rehabilitation 2030" initiative highlighted the global unmet need for rehabilitation and called for immediate coordinated actions. Rehabilitation is an investment in human capital that contributes to health, economic and social development through the provision of interventions designed to reduce disability and to optimize functioning in individuals with health conditions so as to enable them to better interact with their environment. It is urgent for governments

to invest in evidence-based, accessible, and affordable rehabilitation to ensure that individuals can participate in education and work, be economically productive, and fulfil meaningful life roles. Link10

Early care by primary care clinicians will decrease chronicity in people with lower back pain. For those individuals who cannot manage their daily living due to back pain, low-cost rehabilitation solutions are available (if no serious disease is present). Link11 These interventions include education, promoting activity and recognizing that some individuals may need help to resolve the problem. The call for action from SPINE20 is to reduce disability from lower back pain (affecting the global community) by facilitating access to spine care and putting in place appropriate first-line care pathways. Through "Rehabilitation 2030", the World Health Organization is currently developing a "Package of Interventions for Rehabilitation" for people with lower back pain that aims to support member states in implementing rehabilitation in their health systems, making rehabilitation accessible to all people in need. Link12

3.3.2. Spinal cord injury

Spinal cord injuries often affect young healthy individuals, resulting in a sudden dramatic and unexpected change in their abilities, lifestyle, family, and community interactions. Depending on the underlying cause of the spinal cord injury, the patient may require multiple healthcare providers to help them on their journey to return to active participation. Link2

Recommendation

Promote global access to comprehensive healthcare for individuals with spinal cord injury to facilitate community inclusion, return to the work force and improve quality-of-life

Rationale:

The aim of spinal cord injury management is to achieve the most functional independence possible. The goal is to be able to cope with the injury, return to the community and eventually to the workforce. To achieve this objective, a team of healthcare providers from different specialties must work together and coordinate specific goals for each patient on an individual basis. This healthcare continuum starts at the time of the injury with proper pre-hospital management, followed by early treatment involving both medical and surgical management. The continuum of care continues to the next step, an extensive inpatient spinal cord injury rehabilitation, ideally done at a specialized spinal cord injury rehabilitation unit. Inpatient rehabilitation is followed by a post-hospital program, home healthcare and, if needed, occupational re-training.[20] Such an approach involves physicians, physiotherapists, occupational therapists, nurses, psychologists, rehabilitation specialists, social workers, phycologists, dieticians, vocational rehabilitation specialists and other specialties if needed.

This multi-disciplinary SCI management system has proven effective in achieving quality care, improved patient integration in the community and cost effectiveness. To implement this approach, authorities would have to build a sustainable workforce capacity to address needs of people with SCI.[21] Governing bodies should consider developing a National Spinal Cord Injuries Program and specialized Spinal Cord Injury Centers. Currently, a wide variety of applications of this comprehensive approach exists globally. There is, however, a notable absence of such centers in low- and middle-income economies, where major challenges are faced in terms of funding, available resources, and access to care.[22]

Recommendation

Create global awareness for the prevention of spinal cord injury (SCI)

Rationale:

Prevention is the most effective tool in medicine. A clear example of a successful prevention program is vaccines which have led to disease eradication. In spinal cord injuries, prevention is always better than the cure, particularly as there is currently no cure available to reverse paralysis caused by injury. Spinal cord injury prevention is not a pure medical problem per se. It involves many stakeholders, policy makers and society. Successful prevention will reduce exorbitant medical costs and prevent substantial indirect costs related to loss of productivity and social support.

To mount a successful spinal cord injury prevention program, clear requirements and strategies must be defined. Accurate data and statistics on the causes of injury and the estimated annual cost of spinal cord injuries are required to plan a successful prevention program. For example, road traffic accidents are the primary cause of spinal cord injuries in the middle east, while sports-related injuries are the primary cause in the far east region. Therefore, each region will require a different prevention strategy for a successful prevention program. In general, short- and long-term prevention programs are not recommended. Community and government involvement are necessary, and frequent evaluations and reviews of the strategy may be needed to adjust the next program. A true collaboration between public health officers (PHO), non-governmental organizations (NGO), and international organizations is required to create clear policies and guidelines for spinal cord injury prevention programs.

3.3.3. Preventative strategies and early detection for bone health to prevent spine fracture in the aging population

The proportion of the world's population over the age of 60 will nearly double from 12% to 22% between 2015 and 2050. Link2 One of the major problems of the aging spine is osteoporosis. The increased fragility of the bone leads to osteoporotic vertebral fractures. The spine fractures are painful and significantly affect the elderly patients' quality-of-life and morbidity, and increase the incidence of subsequent vertebral fractures, and mortality rate. There is strong evidence that osteoporotic vertebral fractures

are preventable with appropriate lifestyle, medication and early screening. The Fragility Fracture Network (representing 75 global associations) recommends 4 pillars:

1. Multidisciplinary care of the acute fracture episode along orthogeriatric lines
2. Excellent rehabilitation to recover function, independence and quality-of-life, starting immediately but continuing long-term
3. Rapid secondary prevention after every fragility fracture, addressing the risk of falls as well as bone health
4. Formation of multi-disciplinary national alliances to promote policy change that enables three pillars listed above. Link13

Recommendation

Encourage and support osteoporosis preventive strategies and early detection measures, particularly in the older population at risk of developing osteoporotic fractures.

Rationale

Osteoporotic vertebral fractures are common among the elderly population. In Japan, 25% of female septuagenarians have experienced an osteoporotic vertebral fracture. In a Canadian population-based study, vertebral deformities were found in 23.5% of women and 21.5% of men aged 50 years and older. In 2005, the USA reported that the osteoporosis morbidity and mortality cost was approximately USD 17 billion. This is not only a problem of developed countries. The WHO reported that 80% of elderly people (aged 60 or older) will be living in low- and middle-income countries in 2050. Link3

Osteoporosis-related fractures often result in chronic pain and disability and affect daily activity, physical activity and the quality-of-life of elderly individuals. Education of health care practitioners and the public is the best tool in the early detection of osteoporosis and prevention of osteoporosis-related fractures. Screening tools such as Bone Mineral Density measurements and the fracture risk assessment tools are widely available and have been proven effective in early osteoporosis detection. Moreover, weight-bearing exercises, proper nutrition with Vitamin D and calcium supplements, and avoidance of tobacco intake reduces the severity of osteoporosis and prevents debilitating fractures among the elderly. Maintaining physical activity and exercise – with special attention to the ability to ambulate and carry out daily activities while preventing falls – help the elderly to remain active and independent in the community.[23]

The absolute risk of a subsequent vertebral fracture among women with a previous vertebral fracture has been reported to be 50%, compared to 9% among women with no fracture.[24] Increasing age and a history of osteoporotic fractures predict subsequent fractures independent of bone mineral density.

Therefore, the identification of individuals who have experienced vertebral fracture could also be a critical strategy for minimizing the burden of osteoporotic vertebral fractures.

3.3.4. Spine disease in children and adolescents

Spine conditions in children and adolescents are often thought to be rare, however, recent reports suggest that back pain is relatively common in this age group. Up to 50% of teenagers have experienced back pain at some point, while up to 10% may have experienced severe enough pain to keep them out of school or sports.[25] Although most back pain is not due to an underlying serious problem, this is not always the case. Conditions such as tumors, infections, deformities, congenital or trauma should be always be properly accessed and ruled out. Many spine diseases in children and adolescents are safer to treat when diagnosed and managed early.[26] Pediatric spine conditions tend to become extremely complex and challenging with time and growth of the child.[27] Access to early, high-quality spine care is therefore essential, and requires specialized training for health care practitioners treating pediatric spine conditions.

Recommendation

Support projects that improve access to quality spine care for the pediatric population, particularly in areas with limited resources.

Rationale

Diagnoses of spine disease in children and adolescents are often delayed or missed because the onset is usually very subtle and only becomes more obvious as the child grows. Early diagnosis makes a huge difference in the successful management of the pediatrics population. Access to multi-disciplinary and interprofessional spine care is the most important factor for early diagnosis, management, and optimal care, resulting in cost reduction, improvement of outcomes and prevention of major spine-related disabilities and life-threatening consequences. Several challenges are encountered while treating spine conditions in children and adolescents. Practitioners aim to control the spine disease without affecting the normal growth of the trunk. A short trunk would affect the development of the internal organ systems in the child. Moreover, serious spine conditions in this age group often require substantial resources, advanced technology, and multiple specialized healthcare providers. Adequate support to research and education is needed to achieve safe, effective and efficient treatment and to provide the child with a prosperous life.

Recommendation

Promote balanced nutrition in the young population, to ensure full access to vitamins and nutrients throughout childhood

Rationale

Balanced nutrition is fundamental to spine development and health in childhood, adolescence, and adulthood through old age. Prevention is one of the most important strategies for spine health, degenerative pathology, deformity and traumatic pathology. It is essential that governments promote balanced nutrition in the young population to guarantee full access to nutrients and vitamins for all ages during childhood. Nations must recognize that balanced nutrition, access to nutrients and the fight against malnutrition, undernutrition as well as obesity are fundamental for the treatment of spinal disorders in childhood and adolescence.[28] A balanced diet is fundamental for healthy spinal growth and to maintain function in adulthood through old age. SPINE20 encourages governments to reduce inequalities – that are the underlying cause of unbalanced nutrition in the population – to guarantee full access to nutrients and vitamins for all ages.

3.4. Improved access to valued-based care

Value-based health care is a framework for reconstructing health care systems around the globe with overreaching of value for patients.[29] Put another way, we could define that value as the health outcomes that matter to patient versus the cost of delivering healthcare. Standardized tools are needed to measure both – the outcome and the cost. Patients, providers, payers, suppliers, and society all benefit from such an approach.

All age groups may experience back pain that would severely impair quality-of-life. Eighty percent of the population will have back pain at some stage of their life. Some will suffer catastrophic consequences. In 2010, musculoskeletal disorders caused nearly 166 million years lived with disability (YLDs), with neck and lower back pain comprising 69% of the total. This explains why spinal disorders are a major cause of costs and human suffering in both emerging and industrialized countries. Spine care must be improved on a global level to mitigate spine disability and costs. Advocacy, education, and government policies are mandated.

With new lifestyle changes worldwide, the prevalence of back pain is rising. The wide spectrum of spine pathologies require multiple professional backgrounds to treat them. An immense diversity of treatment options is currently available, with medical and surgical treatments and technologies evolving rapidly, adding to the complexity of the spine practice. Most existing practices worldwide are fragmented. Spine professionals from a spectrum of disciplines work independently and lack the appropriate utilization of outcome measures.

Recommendation

Implement the principles of Valued-based Health Care in spine practice to optimize spine care in the global community

Rationale

In value-based healthcare models, medical care does not exist in silos. Instead, primary, specialty, and acute care are combined in a delivery model of care that is both patient-centered and integrated. Link14 It is a coordinated approach to patient care, often led by a patient's primary care professional who directs the patient's whole clinical care team. The valued-based healthcare model is data-driven based on patient-reported outcomes, i.e. what the patient considers to be the best outcome.[30] The wide spectrum of spine pathologies require multiple professional backgrounds to treat them. An immense diversity of treatment options is currently available, with medical and surgical treatments and technologies evolving rapidly, adding to the complexity of the spine practice. Spine care must be improved on a global level to mitigate spine disability and costs. Advocacy, education, and government policies are mandated.

3.5. Implementing patient safety programs in spine care

There has been a tremendous rise (up to 54 %) in the number of spine surgeries performed worldwide for spine-related conditions[31]. A proportionate rise in complications, revision surgeries (408% for primary spinal fusions and 535% for revision spinal procedures between 1998 and 2006), together with the associated costs and medicolegal burden is a global concern. Link15 In a review analysis of 105 articles, involving 79,471 patients who underwent spine surgery, an overall complication incidence of 16.4% was observed, highlighting the significance of patient safety in spine care.[32] Ensuring safe practices may have upfront costs; however there are significant costs related to a lack of safe practices as well. Emerging literature shows how risk stratification programs, teamwork, and technology can all improve patient safety.[33] Achieving patient safety is a continuous process and not a one-time event or short-term activity. Therefore, it is urgent for governments to invest in evidence-based and accessible care with a focus on patient safety to ensure that individuals can participate in meaningful life roles.

Recommendation

Recognize the need to address patient safety which requires appropriate training and teamwork in spine care

Rationale

A lack focus on patient safety can have an impact on the overall outcomes in spine care, leading to social and economic expenditures that could otherwise be avoided. Emerging literature shows how

risk stratification programs, teamwork, and technology can all improve patient safety. Link16 These programs should be supported in ways that make them feasible, easy to implement, low cost, and with low regulatory burden.

Achieving patient safety is a continuous process and not a one-time event or short-term activity. Patient safety does not come in one single program and is not performed in isolation. Teamwork, multi-specialty care, and technology all have roles in patient safety. SPINE20 is calling for governments to identify programs and processes that can improve overall patient safety while limiting the burden on physicians and providers. This will lead to better adoption of programs dedicated to patient safety, improve patient outcomes, and minimize costs associated with spine care.

4. Future of spine care

The future of health care – including spine care – will be driven by patient-centered outcome data. Advancements in spine care such as big data, computer vision, machine learning, artificial intelligence, virtual and augmented reality, navigation robotics technology, telemedicine and day care centers have significant potential to improve outcomes and the quality of spine care. These technologies benefit patients, governments and the community and should therefore be tapped to their potential. New models of spine care are required that better reflect patients' individual needs through care that is patient-centered, coordinated, and provides choice and value. Outcome measurement – to evaluate an individual's health status and functional level across the spine care pathway – is a cornerstone in the implementation of improved care that will lead to decreased costs and less human suffering.

Recommendation

Create national / global big data collections in the form of registries or other modalities so future care is based on reliable and valid outcome data

Rationale

Exponential growth in information is transforming what governments can do for the people they represent. Data must be reliable, valid and continuous. All around the world, Evidence Based Medicine (EBM) is the established standard for the provision of healthcare.[12] Clinical randomized trials give the clinician information about new treatments in smaller groups for efficacy and harms in the population. Predictive cohorts will help the public health system to gauge interventions. It is not possible to transfer results from one population to another; however, we can learn from each other and try to harmonize the data collected. This is where big data is helpful. Population-based and/or practice-based standardized data can be utilized by national healthcare systems to make their decisions.

Global access to affordable and quality spine care will be in accordance with sustainable development goals. One method of using patient outcome data to improve health care value is disease registries. An international study of 13 registries in five countries (Australia, Denmark, Sweden, the United Kingdom, and the United States) suggests that by making outcome data transparent to both practitioners and the public, well-managed registries enable medical professionals to engage in continuous learning and to identify and share best clinical practices of value, saving substantial costs for the government and individuals.[34] Advancements in spine care such as big data, computer vision, machine learning, artificial intelligence, virtual and augmented reality, navigation robotics technology, and telemedicine have significant potential to improve outcomes and quality of spine care and should be tapped to their potential. Strategies should be framed on how to improve global access to these advancements in spine care.

5. Comments from SPINE20 participants (2020)

The inaugural SPINE20 summit in Riyadh, Saudi Arabia November 10-11 discussed and vetted the recommendations proposed. It is the desire of the SPINE20 leadership to involve spine societies around the world, listen to their voices and incorporate participants' comments. All comments by participants (email and chat) were collected and classified into the relevant proposed recommendations. The comments were then reviewed by three independent evaluators to determine whether they challenge or support the recommendations and supporting text. If consensus was not reached by the three independent reviewers, the comment was brought to the Recommendation and Publication Committee for decision of appropriateness. All comments from participants were acknowledged and incorporated into the current text or moved as suggestions for the next SPINE20 Conference in Italy.

In all 137 written comments were received. One recommendation was changed due to lack of evidence and reformulated. Excellent suggestions for future topics were recorded and will be reviewed for next SPINE20 meeting in Italy 2021. The Recommendation and Publication Committee thank all SPINE20 participants for their valuable insight, thoughtful suggestions, and important contribution.

6. Conclusion

Spine care and the prevention of spinal disorders will be driven by evidence in the future. A data-driven health care system will serve to deliver best-practice care, engage patients, and collaborate across the ecosystem to foster strong, actionable relationships, resulting in better outcomes for patients and the community. Data collected must be valid and reliable, patient-centered and interprofessional across all disciplines caring for a healthy spine. Spine care works best in a continuum with all care providers and the patient engaged. Collection of valid data will help the patient to achieve better outcomes, the healthcare provider to provide value-based care, the community to enhance participation of the injured or disabled person, and governments to save costs.

SPINE20 has identified areas for prevention and care to be implemented based on evidence from the WHO, important scientific studies, and involvement from the largest and best-established spine associations around the globe. There are three main themes to address:

1. Information and education
2. Screening for prevention of loss of function
3. Delivery of valued-based health care

Nations interested in reducing disability, human suffering and costs may find these recommendations valuable for implementing a course of action. It may not be identical in each nation but well-suited for their population and adapted to the costliest spine problems.

In these troubling times of COVID-19, we have seen the importance of valid data collection and its impact on nations. Actions from government will always be culturally and politically influenced. SPINE20 hopes that the above recommendations and actions for the prevention/reduction of spinal ailments and value-based care will be based on the best possible evidence.

7. References and links:

Link1: https://www.globalspinecareinitiative.org/

Link2: https://www.who.int/disabilities/policies/spinal_cord_injury/en/

Link3: https://www.who.int/news-room/fact-sheets/detail/ageing-and-health

Link4: https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight

Link5: https://www.globalspinecareinitiative.org/model-of-care

Link6: https://www.spine.org/Portals/0/assets/downloads/ResearchClinicalCare/Guidelines/LowBackPain.pdf

Link7: https://www.who.int/teams/health-promotion/physical-activity/physical-activity-and-adults

Link8: https://www.who.int/news-room/fact-sheets/detail/physical-activity

Link9: https://www.who.int/rehabilitation/rehab-2030/en/

Link10: https://www.cdpr-research.org/global-spine-care-initiative

Link11: https://www.who.int/rehabilitation/rehab-2030-call-for-action/en/

Link12: https://www.who.int/disabilities/policies/spinal_cord_injury/en/

Link13: https://www.fragilityfracturenetwork.org/cta/

Link14: https://catalyst.nejm.org/doi/full/10.1056/CAT.17.0558

Link15: https://www.usbji.org/

Link16: https://www.who.int/patientsafety/en/

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The executive summary of the SPINE20 recommendations are available at https://spine20.org/event/statments-and-recommendations/

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8. Acknowledgments

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Brazilian Spine Society
Egyptian Scoliosis Society
Egyptian Spine Society
Egyptian Spine Study Group
Emirate Society of neurological Surgery
Hellenic Spine Society
International Musculoskeletal Society
International Spinal Cord Society
Jordan Spine & Pain Management Society
Kuwait Spine Society
Mexican Society of Spine Surgeons
Romanian Society of Spine Surgery
Saudi interventional Radiology Society
Saudi Orthopaedic Association
Saudi Physical Therapy Association
Saudi Rheumatology Society
Saudi society of Neurological Surgery
Saudi Society of Pain Medicine
Society of Indian Physiotherapist
Society of Spine Surgeons of Pakistan
Spanish Society of Vertebral and Spinal Cord Surgery
Spanish Spine Society (GEER)
World Federation of Chiropractic
World Spine Care Europe
European Spine Journal
Global Spine Journal

9. Speakers

The following esteemed lecturers gave evidence-based presentations at the SPINE20 Inaugural virtual meeting November 10-11, 2020 held in Riyadh, Saudi Arabia. The presentations were organized in eight symposia and covered; The Aging Spine in the Aging Population, Future of Spine Care, Spinal Cord Injury, Children and Adolescent Spine, Spine Educational Standards, Spine Related Disabilities and Spine Health Burden of Economy.

Ajoy Prasad Shetty, India
Alan Hilibrand, USA
Alex Vaccaro, USA
Alexandra Rauch, Switzerland
Andrea Luca, Italy
Andrew Briggs, Australia
Antonello Caserta, Italy
Carlo Ruosi, Italy
David Wong, USA
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Donata Peroni, Italy
Hazzaa Al Hazzaa, Saudi Arabia
Jamiu O. Busari, Netherlands
Joseph Ihm, USA
Kern Singh, USA
Majed AlOsaimi, Saudi Arabia
Marco Brayda Bruno, Italy
Marco Crostelli, Italy
Mehmet Zileli,, Turkey
Michael Fehlings, Canada
Pierre Côté, Canada
Rachid Salmi, France
Robert Gunzburg, Belgium
Sami Haddadin, Germany
Sigurd Berven, USA
Suken Shah, USA
Tim Pigott, UK

10. SPINE20 team members

The following societies represented by the inaugural team members compiled, discussed, designed and approved all recommendations before presented at SPINE20 inaugural virtual meeting November 10-11, 2020 held in Riyadh, Saudi Arabia.

Saudi Spine Society (SSS)
EUROSPINE
North American Spine Society (NASS)
German Spine Society (DWG)
Association of Spine Surgeons of India (ASSI)
Italian Spine Society
Sami AlEissa, Saudi Arabia
Thomas Blattert, Germany
Eeric Truumees, USA
Margareta Nordin, France
Faisal Konbaz, Saudi Arabia
Eric Muehlbauer, USA
Frank Kandziora, Germany
Hana AlSobayel, Saudi Arabia
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