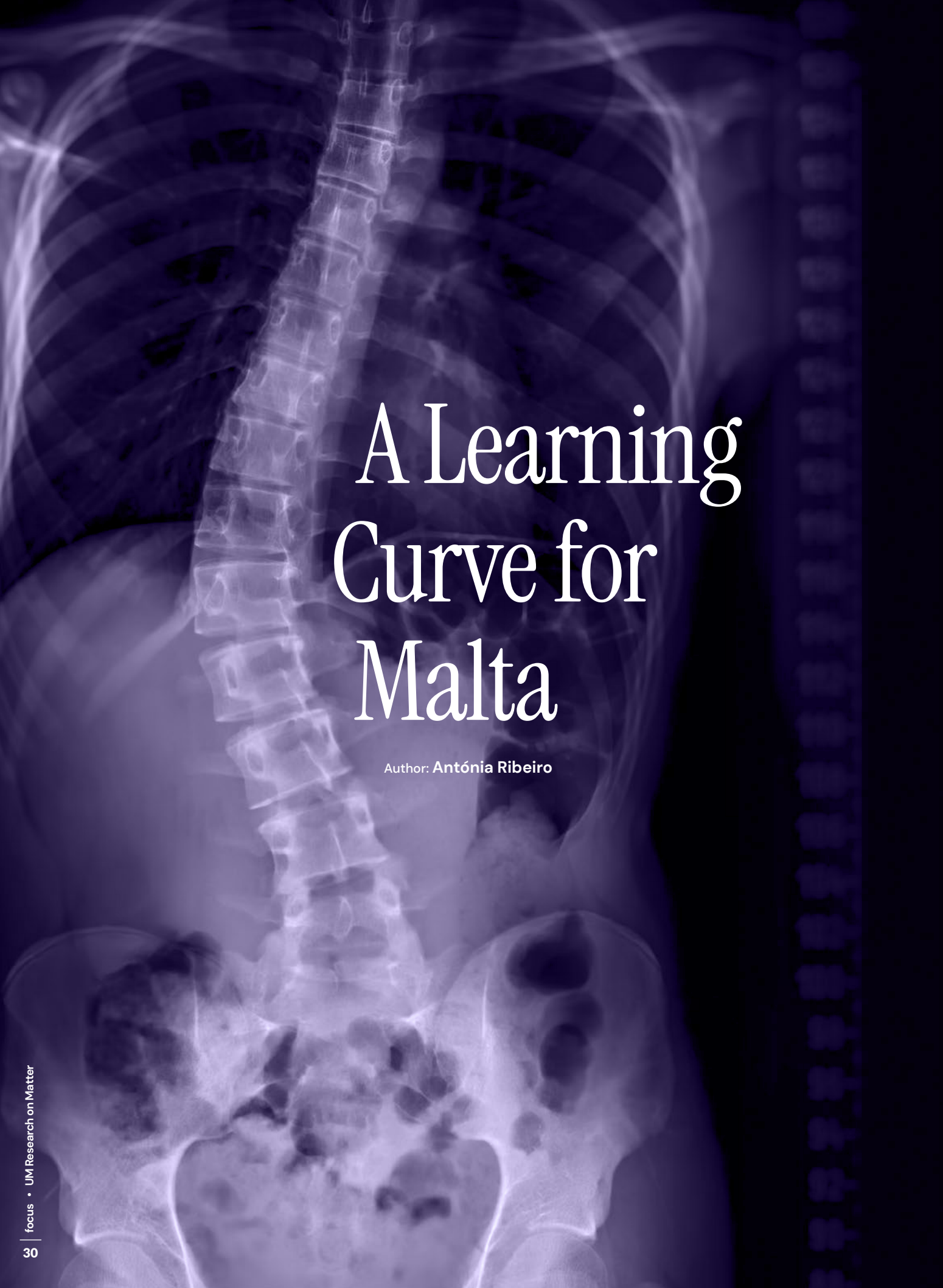




A Learning Curve for Malta

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Doctors, spinal surgeons, nurses, radiographers, radiologists, medical staff, school staff, family, and friends are all part of our medical journey. Medicine is a collective endeavour that relies on collaboration across disciplines and social groups. This is especially true for adolescent idiopathic scoliosis – a deformity of the spine that starts developing in children aged 10 years or older. Researchers acknowledge a lack of awareness of the condition in Malta. **THINK** investigates what is being done to solve this.

Adolescent idiopathic scoliosis (AIS), timing is critical. As Dr Sarah Cuschieri, a medical doctor, chronic disease epidemiologist, and senior lecturer at UM's Department of Anatomy, explains, 'Early identification and appropriate management can prevent progression to severe deformity and reduce the need for invasive treatment.' Delays in diagnosis allow curves to worsen, thereby decreasing treatment options. In addition to these time-sensitive aspects, spinal vertebral deformities that progress beyond certain curvatures are more likely to continue progressing into adulthood.

Early diagnosis is essential in AIS, and an attentive eye at school, or among family and friends, can truly make a difference. Changes in the spine's curvature are usually spotted by academic staff at secondary schools. However, Cuschieri stresses that a visual check is not diagnostic and needs to be followed by a medical assessment. Strengthening AIS education for medical students is also essential to ensure that future doctors can detect deformities early and refer patients to specialised services.

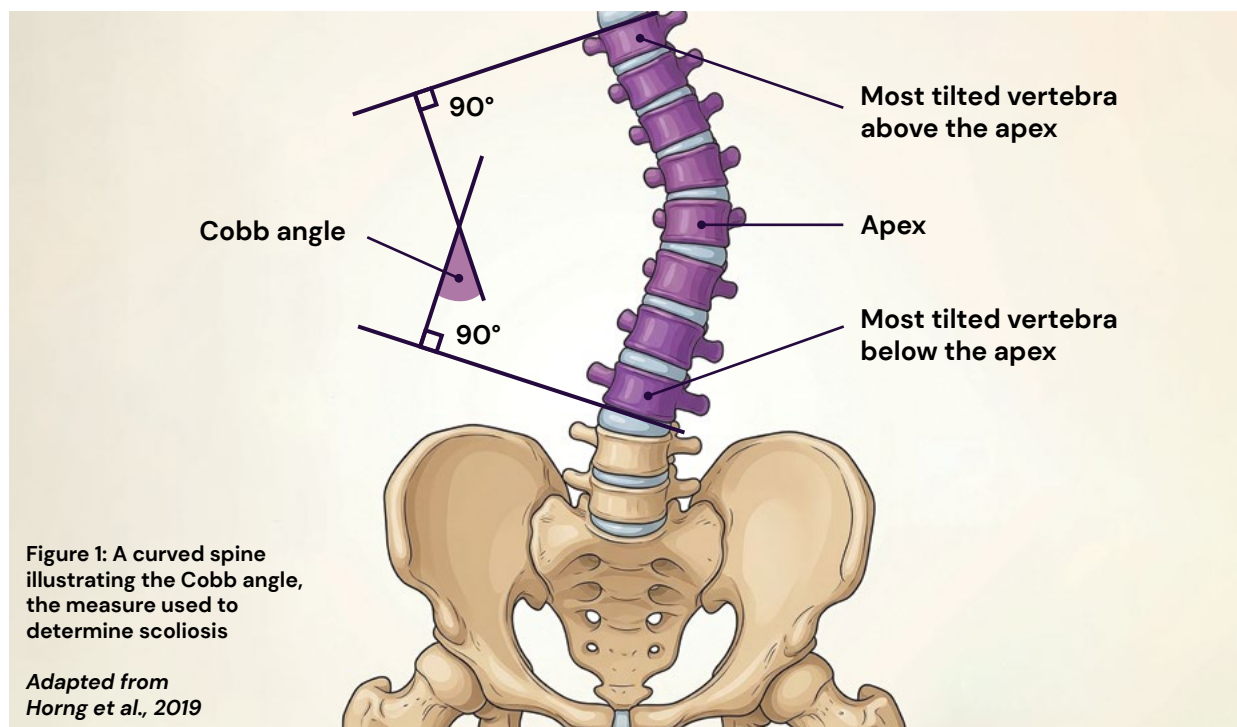
AIS is a three-dimensional deformity of the spine, with no underlying cause. Contrary to popular belief, AIS is not caused by poor posture or carrying heavy bags. Clinically, it is diagnosed when the spinal curvature has a Cobb angle (a widely used measure of spinal deformation – see Figure 1) greater than 10 degrees. Congenital or neuromuscular causes need to be ruled out before reaching an AIS diagnosis.

PSYCHOLOGICAL IMPACTS

Patients with untreated AIS can still have a good quality of life, yet spinal curves can cause limitations and, in severe cases, can even lead to cardiopulmonary issues. A condition that affects physical characteristics during an emotionally sensitive period, such as adolescence, is bound ➤



Dr Sarah Cuschieri
Photo by James Moffett



to bring complicated emotions. AIS has a real impact on teenagers' emotional well-being and self-esteem, even when there are no observable impacts on physical function.

Treatment for AIS varies according to factors such as curve severity, skeletal maturity (related to the patient's age), and risk of progression. As spinal curvature increases, so does the invasiveness of the treatment. For mild, low-risk curves, no intervention is needed, and patients are followed up by spinal orthopaedic specialists. Moderate curves in adolescents are tackled with bracing, 'which has strong evidence for reducing progression,' Cuschieri explains. Surgical intervention is considered for severe curvature (over 40 degrees) when conservative options are less likely to be effective.

However, research shows that surgery does not ensure a better quality of life. Cuschieri argues that AIS requires holistic approaches, 'including psychological support, shared decision-making, consistent outcome measurement, and health system designs that minimise late presentation.'

UNDERSTANDING AIS IN MALTA

Cuschieri is a researcher focused on the epidemiology and burden of non-communicable diseases. She is particularly interested in conditions like AIS, which manifest early in life and have long-term health, social, and economic consequences.

Her most recent study looks beyond the condition's clinical implications. The research project integrates clinical experience with population analysis through a collaboration with Stephan Grech, a spinal surgeon specialised in AIS and

a consultant at Mater Dei Hospital. Together, Cuschieri and Grech are exploring and assessing how AIS and its treatments are experienced, perceived, and understood by teenagers. The study also goes beyond typical clinical assessment by looking into the impact on quality of life, well-being, and sleep patterns.

In addition, Cuschieri seeks to examine the relationship between clinical severity and impact on quality of life. The severity of the condition is determined by the Cobb angle, as indicated by a scolliogram, which is a radiological image of the spine. The decision to proceed with surgery is based on this marker, yet there is no data to establish whether clinical severity aligns with patients' lived experience.

The researchers aim to pinpoint knowledge gaps among both the overall population and medical students. 'Together, these components allow us to identify gaps in awareness, education, and support that can be addressed at a national level,' Cuschieri explains.

Finally, the study will bring important epidemiological data about the Maltese context. Having national data, instead of relying solely on international statistics, allows for evidence-based service planning. With reliable local data, needs can be better assessed, which in turn strengthens early detection and referral strategies.

COULD YOU SPOT AIS?

The study is two-fold: 1) assessing the AIS patients (described in the previous paragraph), and 2) collecting data from 500 participants (who are not AIS patients),



including adolescents, secondary school teachers, medical students, and the general population. The results clearly indicate a gap in basic AIS knowledge at the population level. Analysis of the collected answers also suggests that most knowledge of the condition is driven by personal exposure (for example, having the condition or knowing someone with AIS) rather than by education or public awareness.

Secondary school teachers are in an optimal position for early detection of AIS. However, this group reports low confidence in identifying the condition, which Cuschieri describes as a 'missed opportunity for early detection within the school setting'. Similarly, medical students show gaps in knowledge about risk factors, screening, and non-invasive treatment. Instead of formal teaching, prior exposure emerged as the main predictor for better knowledge of AIS – a concerning pattern for future doctors.

From these results, Cuschieri concludes that 'AIS in Malta is still under-recognised, inconsistently understood, and largely dependent on chance exposure rather than systematic education.' To ensure early detection and avoid curvature progression, the researcher emphasises the need for education strategies across healthcare, schools, and the general public.

CREATING AWARENESS

Although some results have already been extracted from the collected knowledge-related data, the research team still needs to analyse the full national dataset. Results from the clinical, psychosocial, and knowledge-related

components will then be integrated into the holistic analysis of AIS. Cuschieri and Grech aim to assess the quality of life, well-being, sleep, lived experience, and awareness of AIS patients and correlate these with clinical severity.

Cuschieri intends for the study to improve awareness among healthcare professionals and the general population. The researcher also highlights important gaps in current clinical practice, which her study helps to unravel. First, clearer referral and follow-up pathways need to be implemented to ensure timely management. Then, conservative management services need to be better integrated, and patient-reported outcomes should also be considered when making clinical decisions for AIS management.

Finally, Cuschieri hopes that the new data will inform policies driving investment in adolescent musculoskeletal health. Once the data analysis is complete, the research team wants to ensure that their data does not stay on paper. To increase AIS awareness, clinicians, educators, policymakers, and the wider public need to be actively engaged. **T**

Further Reading

Horng, M. H., Kuok, C. P., Fu, M. J., Lin, C. J., & Sun, Y. N. (2019). Cobb angle measurement of spine from X-ray images using convolutional neural network. *Computational and Mathematical Methods in Medicine*, 2019, 6357171. <https://doi.org/10.1155/2019/6357171>