A Comparison of the Spinal Teaching Provided to Undergraduate Medical Students Across the UK

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Ethical approval SREC	**SREC reference:** SMREC 21/20

Abstract

Introduction: Back pain is one of the leading presentations to general practices and healthcare providers. It accounts for over 2.8 billion pounds of the NHS budget each year creating a huge financial burden on the NHS. As a result, the Royal College of Surgeons and British Orthopaedic Association deem it essential that medical schools include back pain and spinal conditions in their undergraduate curriculum.

Objective:

1. To assess the quantity of spinal teaching in UK medical schools.
2. To share resources and encourage other universities to participate in the sharing of materials and collaboration in order to improve standards.

Methods: Ethical approval was requested and granted from Cardiff's School Research Ethical Committee (SMREC). A questionnaire was designed and distributed to all 36 UK medical schools via email and google forms. A Dropbox folder was created and used as a platform to share resources. The folder contained 13 lectures, a case handbook, e-learning resources and teaching plans.

Results: Out of the 36 Universities 16 (44%) completed the questionnaire; many universities did not provide teaching on certain spinal topics including Radiology, Lumbar Puncture, Spinal Infections, Stenosis, Cervical Myelopathy, Spinal Cord Compression, Scoliosis/ Kyphosis and Neck pain. No universities contributed to the Dropbox file.

Discussion: Universities are reluctant to openly highlight the weaknesses in their curricula and work is needed to create a healthy environment in which universities share resources and encourage collaboration. With Covid-19 there has been a shift towards online learning and with it comes the ability to share teaching and materials.

Conclusion: Curricula created by various organisations have provided guidance for undergraduate teaching on the spine. We have identified a significant deficit in the teaching on undergraduates in UK medical schools across many of the spinal core curricula subjects.

Introduction

Of the adult population, 49% suffer with musculoskeletal (MSK) pain, lasting for a week or more in a given month; the majority, 23%, reported this pain in their back with a further 14% saying the pain was in their neck [1]. MSK pain is the most common cause of physical disability and chronic pain in the Western World and is the second most common presentation to GP's [2]. In 2013 it was estimated that £2.8 billion was spent directly on back pain across the nation. This does not take into account the indirect costs lost from productivity [3]. This cost will be increasing every year with an aging population, lack of physical exercise, increasing obesity, and increasing numbers of road traffic accidents and trauma [4].

The British Orthopaedic association (BOA) created a recommended syllabus for medical students for their Trauma and Orthopaedic (T&O) teaching. It highlights the need for teaching on low back pain, degenerative disc disease, spondylolysis, scoliosis, sciatica, cauda equina, spinal fractures/ trauma, spinal infections and metastatic spinal cord compression [5]. The syllabus can be seen in Appendix. The National Undergraduate Teaching in Surgery as laid out by the Royal College of Surgeons (RCS) shows a similar picture; (Appendix 2) with recommendations for back pain, sciatica and cauda equina syndrome teaching [6]. Both the BOA and the RCS recommend teaching on spinal examination, highlighting its importance.

In 2019, a national consensus was held to determine which surgical specialities medical students deem to be of most important [7]. This study highlighted that medical students deemed examination of the back and cervical spine essential. Teaching on back pain, sciatica, cauda equina and metastatic cord compression were also essential and as a result should be a part of undergraduate teaching programmes. Despite this, the study also highlighted that students rarely got to spend time in Neurosurgery meaning they did not get exposure to these conditions whilst on placement. This study highlights the desire by medical students to have more teaching on these important topics [7].

Due to the high prevalence of back pain and significant economic burden, the authors believe that back pain and spinal conditions should be taught to medical students and be part of the core curriculum in the UK. The aim of this study was to assess the quantity of spinal teaching currently provided in UK medical schools with a short questionnaire. The second aim was to collaborate with other Universities, share materials and ultimately improve education delivery on this topic.

Method

Ethical approval was requested and granted from Cardiff's School Research Ethical Committee (SMREC). A questionnaire was created (Appendix 3) and distributed with a cover letter by email to every medical school (n=36) in the UK. The questionnaire was sent firstly by the project lead (a 3rd year Medical Student) with a follow up email two weeks later from the senior project co-ordinator (a Consultant Spinal Surgeon). The questionnaire link was emailed to multiple email addresses found in medical school directories. In addition, Consultant Spinal Surgeons were copied into emails asking for their participation. A minimum of 3 different contacts were emailed in each of the 36 medical schools.
We created a drop box area in which we shared resources created for Cardiff University students, with the hope that other medical schools would contribute. The Dropbox folder contained 13 lectures, a case handbook, e-learning resources and teaching plans.

Results

Of the 36 medical schools in the UK who received the questionnaire 16 replied (44%).
Of the 16 medical schools that replied 7 (44%) said they had a designated teaching block on the spine, 5 (31%) of the medical schools did not have a designated teaching block and 4 (25%) specified other. In addition, 3 universities responded stating they did not wish to take part in the study. All 16 of the universities that replied were included in the study.

Spinal Topics	Lectures only	Small group teaching/ dissection	Small group and lectures	No Teaching	See on placement	Not seen on placement
Spinal Anatomy	6 (38%)	1 (6%)	8 (50%)	1 (6%)	N/A	N/A
Spinal Physiology	8 (50%)	1 (6%)	6 (38%)	1 (6%)	N/A	N/A
Examination of the Spine *	2 (13%)	2 (13%)	8 (50%)	4 (25%)	11 (69%)	5 (31%)
Examination of Spine Neurology*	3 (19%)	2 (13%)	9 (56%)	2 (13%)	10 (63%)	6 (38%)
Spinal Radiology	4 (25%)	1 (6%)	5 (31%)	6 (38%)	8 (50%)	8 (50%)
Lumbar Puncture	2 (13%)	3 (19%)	2 (13%)	9 (56%)	8 (50%)	8 (50%)
Spinal Trauma and Shock	6 (38%)	4 (25%)	4 (25%)	2 (13%)	7 (44%)	9 (56%)
Spinal Cord Compression / Spinal Cord Syndromes *	5 (31%)	3 (19%)	6 (38%)	2 (13%)	7 (44%)	9 (56%)
Cauda equina Syndrome *	5 (31%)	3 (19%)	7 (44%)	1 (6%)	7 (44%)	9 (56%)
Spinal Tumours/ Metastatic Spinal Cord Compression *	8 (50%)	2 (13%)	4 (25%)	2 (13%)	7 (44%)	9 (56%)
Spinal Infections - Discitis / Osteomyelitis / Epidural abscess *	6 (38%)	2 (13%)	3 (19%)	5 (31%)	7 (44%)	9 (56%)
Low Back Pain *	4 (25%)	2 (13%)	8 (50%)	2 (13%)	10 (63%)	6 (38%)
Disc Herniation / Sciatica *	7 (44%)	2 (13%)	4 (25%)	3 (19%)	8 (50%)	8 (50%)
Spinal Stenosis *	4 (25%)	2 (13%)	5 (31%)	5 (31%)	7 (44%)	9 (56%)
Spondylolisthesis *	5 (31%)	1 (6%)	5 (31%)	5 (31%)	6 (38%)	10 (63%)
Neck Pain / Whiplash	6 (38%)	2 (13%)	1 (6%)	7 (44%)	7 (44%)	9 (56%)
Cervical Myelopathy*	4 (25%)	3 (19%)	3 (19%)	6 (38%)	7 (44%)	9 (56%)
Scoliosis / Kyphosis *	3 (19%)	2 (13%)	3 (19%)	8 (50%)	7 (44%)	9 (56%)
Multiple sclerosis / Motor Neuron Disease / Transverse Myelitis	5 (31%)	2 (13%)	6 (38%)	3 (19%)	8 (50%)	8 (50%)
Ankylosing Spondylitis / Rheumatoid Arthritis / Inflammatory Arthritis	6 (38%)	2 (13%)	6 (38%)	2 (13%)	8 (50%)	8 (50%)

Figure 1. Results from the questionnaire. (n=16)
Subjects marked by a (*) are core curricula indicated by the British Orthopaedic Association

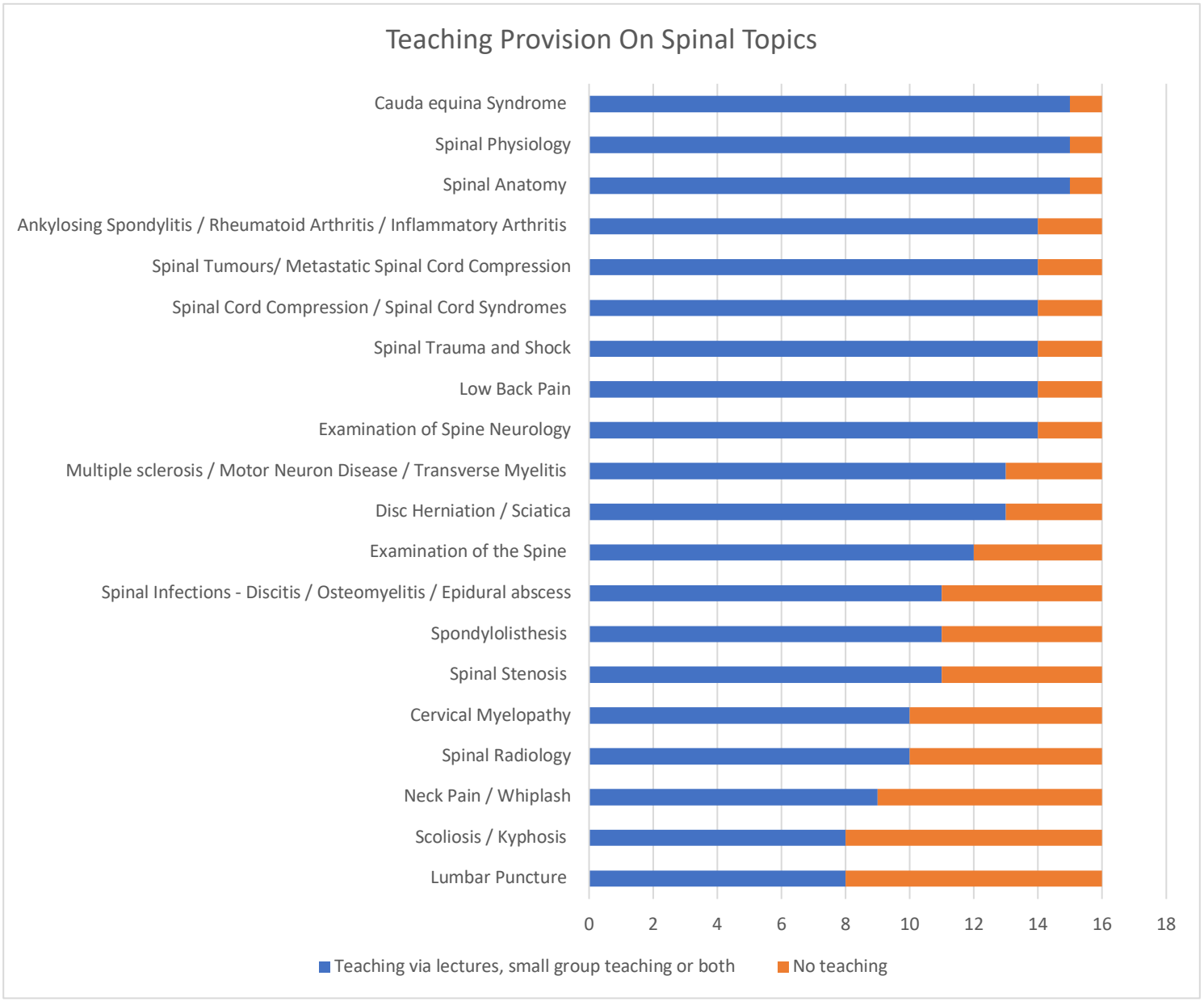

Figure 2. highlights that spinal anatomy and physiology is taught by most Universities (94%). These topics provide the foundations of spinal teaching and allow students to understand the complex pathophysiology e.g. cord syndromes and anatomical variations e.g. scoliosis. 56% of universities said that students had teaching in small groups/ dissecting room on spinal anatomy. 38% said that teaching on anatomy was provided by lecture format only and 6% (1 university) said there was no specific teaching on spinal anatomy.

Figure 3. Illustrates the different teaching styles utilised. As expected, practical topics such as spinal examination are predominantly taught via small groups tutorials or a combination of lectures and small group. Only 2 Universities (13%) taught spinal examination exclusively via lectures. In contrast, spinal tumours and cord compression was taught predominantly by lectures (50%) with 38% having some teaching in small groups.

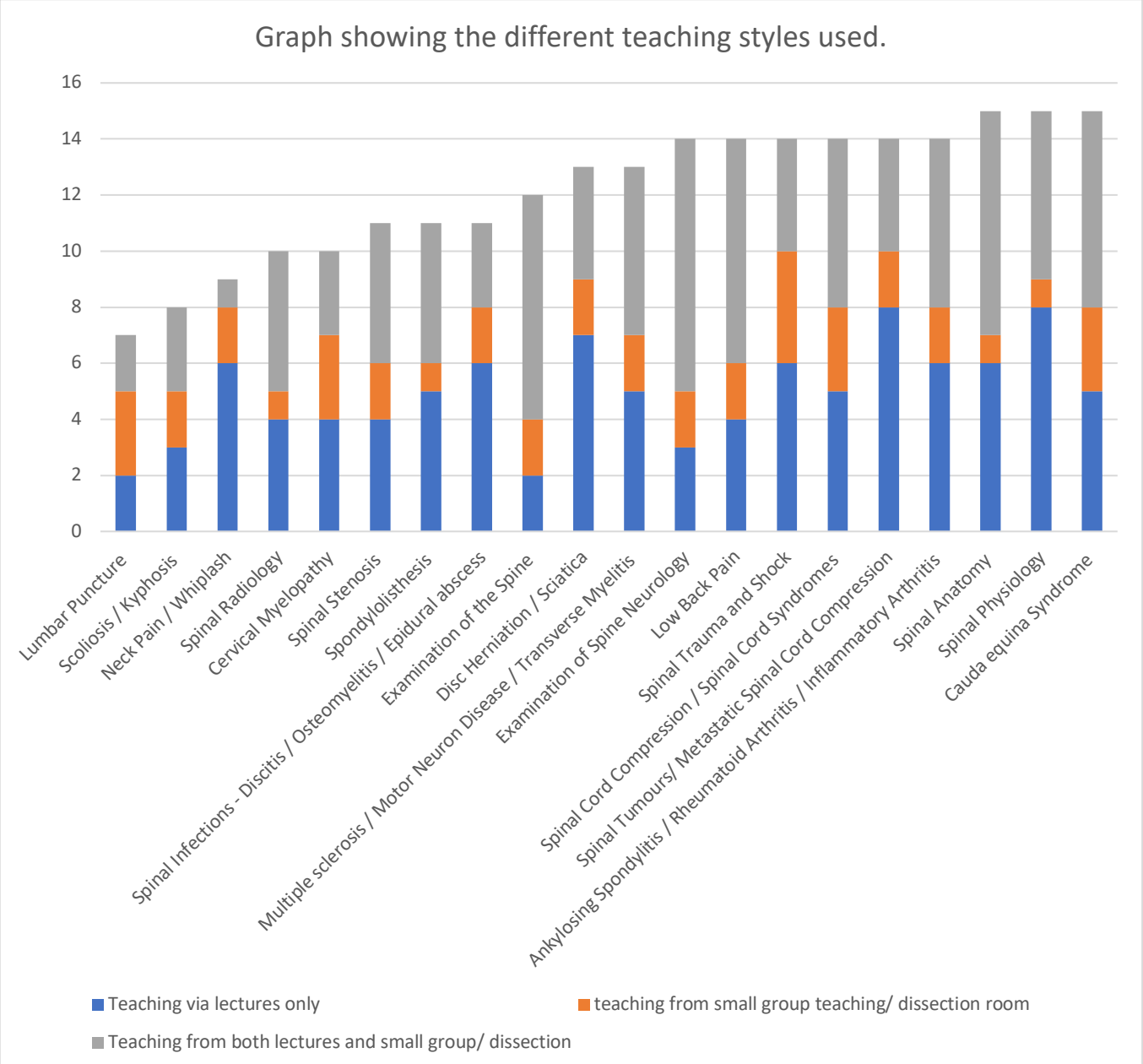

Figure 3. A graph to show which teaching style is used to teach various topics.

All participants were offered access to spinal resources via a drop box link and were encouraged to include some of their own resources. No other university provided resources to the Dropbox. Two universities requested the Dropbox link despite not filling in the questionnaire.

Discussion

MSK conditions account for at least 10% of consultations in the GP. The teaching provided in medical schools may be the only teaching on MSK conditions and the spine for many of our practitioners [8]. It is paramount that the teaching provided by medical schools is in keeping with the needs of today's population.

The topics highlighted asterixis (*) in figure 2 are considered core curricula by the BOA. Scoliosis is one of the core curricula least commonly taught, with 50% of universities not providing teaching on the topic. 4 in 1000 children require treatment for scoliosis making it one of the most common paediatric/ adolescent MSK conditions [9]. The majority of these children will present to GP, highlighting that this condition needs to be recognised by all practitioners, not just spinal surgeons.

Low back pain, spinal trauma, spinal cord compression, spinal tumours and ankylosing spondylitis have an equivalent number of universities providing teaching on these subjects. 87% of universities have teaching on back pain in either lecture or small group teaching format. The remaining 2 Universities (13%) have no teaching on back pain despite it being one of the most common presentations to the GP. Low back pain, spinal trauma, cord compression and spinal tumours are part of the recommended core curricula from the BOA and RCS.

Spinal Examination techniques are not taught by a quarter of Universities. The vast majority of medical students will become GP's, so this is a key skill that they will need in their everyday practice. Lumbar Puncture teaching was not provided by the majority (56%) of Universities. Lumbar puncture is a useful diagnostic technique used in suspected cases of meningitis and subarachnoid haemorrhage. Although it can be considered a specialist or Post Graduate skill only performed in the hospital setting.

Cauda Equina syndrome is taught by most universities, with 94% providing teaching either by small group teaching, lectures or both. Of all the spinal conditions, cauda equina is the topic which is most covered by universities. This is probably because of its high medico-legal reputation. It is one of the BOA core curricula.

Only 62% of Universities provided specific teaching on Spinal Radiology, despite 'MRI whole spine' being the gold standard diagnostic test for many spinal conditions. In recent years radiology has become the bread and butter of diagnosis and treatment. Future doctors should be comfortable with interpreting plain films, CT and MRI and this comes with teaching and exposure. A syllabus has been created by the Royal College of Radiology (Appendix 4). It indicates that students should be able to identify emergencies such as spinal cord compression, spinal fractures and dislocation. It also indicates that students should be taught about the causes of back and neck pain and how to identify them on plain radiographs and CT [10].

Recently there has been some debate whether a standardised curriculum should be provided for undergraduate teaching. Many specialities including Trauma and Orthopaedics

have expressed concerns that their speciality isn't being represented in teaching provided to students. Currently the General Medical Council (GMC) provide the "Outcomes for Graduates" which offers non-specific generic curricula for medical schools [11]. Many advisory bodies have created their own core curricula as a recommendation, however medical schools have autonomy to provide teaching on what they see as best fit. A minimum standard curriculum could provide reassurance that adequate teaching is being provided to all specialities and could be in keeping with the needs of today's society and disease burden [12].

It has been suggested by a number of different studies that exposure and positive experiences in a speciality are not only imperative to patient safety but can increase students' interest in that career path [13-14]. There are further links to students having adequate role models and mentors which can provide guidance in whichever speciality they may choose [15]. Teachers not only require enthusiasm and good communication skills but the knowledge and experience to teach the subject to a high standard; consequently, spinal specialists should be involved in the teaching on the spine (Spinal Surgeons, GPs with a specialist interest, Orthopaedic Surgeons, Rheumatologists, Neurologists, Pain Specialists, Physiotherapists, Advance Nurse Practitioners). Relationships between students/ juniors with consultants is required to provide opportunities and inspire the next generation. Without adequate teaching on the spine there will be a lack of curiosity into pursuing careers in this area.

Limitations

Out of the 36 universities asked to take part, 44% participated in the study; a number of factors may have hindered participation.
If a medical school does not have adequate teaching on the spine, they may not wish to participate because it could highlight that they are underperforming in this topic. This will ultimately result in a data bias, with those replying to the questionnaire more like to have teaching on the spine.

The COVID-19 pandemic has created obstacles in both distribution of the questionnaire and completion. We found that many universities were not picking up their phonelines because the team were working out of office. Emails to generic addresses took significantly longer to be replied to. With the pandemic many people have had to adapt their style of working and take on a greater workload; possibly resulting in emails and questionnaires being ranked low priority and being forgotten about. Many of the email addresses were found from online directories; this made it difficult to find the best email address. In addition, spinal teaching is spread over a number of specialities including trauma and orthopaedics, neurology, rheumatology, anatomy, radiology and chronic diseases so teaching may not be organised by a single individual.

Although participation by universities was limited, this highlights an important negative result. Universities are reluctant to highlight the weaknesses in their curriculum and work is needed to create a healthy environment in which Universities share resources and encourage collaboration. With COVID-19 there has been a massive shift towards online learning and with it comes the ability to share teaching and materials. The pandemic has

highlighted that learning can take place in many environments and a lecture in theory could be shared to the world providing someone has a computer and internet connection. Technological advances have allowed “e-learning” to take place and have allowed flexibility in the way in which students study.

Only 16 out of the 36 medical schools responded to our questionnaire and this might not represent the teaching provided across the whole of the UK. Universities with a spinal syllabus may be more likely to respond to the questionnaire creating a positive data bias. With a self-reporting questionnaire, there could be a tendency towards over reporting the amount of teaching provided to students to stead the University in good light.

Future areas of improvement include being more specific what counts as a “designated spinal teaching block” as this could be interpreted differently by participants. In addition, the questionnaire could be modified and sent to medical students, post graduate trainees and general practitioners.

Conclusion

Curricula created by various organisations have provided guidance for undergraduate teaching on the spine. Cauda Equina Syndrome, Spinal Anatomy and Physiology are taught by the most universities. However, we have identified a deficit in the teaching of undergraduates in UK medical schools across many of the spinal core curricula subjects recommended by the BOA and RCS. No universities contributed to the Dropbox highlighting there is a reluctance to share resources.

Appendix

1. British Orthopaedic Association Syllabus

British Orthopaedic Association
Caring for Patients; Supporting Surgeons

Dislocation
WRIST/HAND
Distal radius fracture
Scaphoid fracture
Metacarpal / phalangeal fractures
Tendon injuries
ANKLE/FOOT
Ankle fracture
Metatarsal stress fracture
Lisfranc injury
Achilles tendon rupture
SPINE
Cauda equina
Spinal fracture / spinal trauma
Spinal infections
Metastatic spinal cord compression
The painful spine in the child

British Orthopaedic Association
Caring for Patients; Supporting Surgeons

WRIST/HAND
Carpal tunnel syndrome
Wrist ganglions
DeQuervain's tenosynovitis
Dupuytrens contracture
Carpometacarpal arthritis
Trigger finger
ANKLE/FOOT
Bunions
Plantar fasciitis
Achilles tendinosis
Morton's neuroma
SPINE
Low back pain
Degenerative disc disease
Spondylolysis/listhesis
Scoliosis
Nerve root entrapment / sciatica

2. Royal college of surgeons Curriculum

24.	Back pain and/or sciatica (including cauda equina syndrome)	1. List the common causes of back pain. 2. Describe red and yellow flag signs. 3. Discuss the causes of back pain, including mechanical, non-mechanical, inflammatory and other causes, as well as vertebral fractures and neoplasia. 4. Describe the clinical examination and investigations for back pain, including where there is nerve involvement. 5. Identify patients who may need referral to physiotherapy or similar therapy. 6. Describe the indications for imaging and for surgical management of back pain, particularly emergency surgical management of back pain. 7. Discuss the impact of chronic back pain on the individual, their family and society.	T&O Neuro

3. Questionnaire

Questionnaire

The aim of this survey is to gain an understanding of the undergraduate spinal teaching to medical students across the UK. The results are anonymised and will be shared with the respondents. By completing the questionnaire you will be providing consent to be a part of the study.

1. Please enter your Medical School identifier as per the cover letter or the name of your medical school (this will be anonymised):…….

2. Is spinal teaching part of your current medical school curriculum? Yes / No

3. During your undergraduate teaching programme is there specific teaching on the following (tick box)

Topics	Lecture format	Small group tutorials/ interactive sessions / dissection room / other	Do students get the opportunity to see these conditions on clinical placement?
Spinal Anatomy			N/A
Spinal Cord Physiology			N/A
Examination of the Spine			
Spinal / Neurological Examination			
Spinal Radiology			
Meningitis and Lumbar Puncture			
Spinal Trauma and Shock			
Spinal Cord Compression / Spinal Cord Syndromes			
Cauda equina syndrome			
Spinal tumours / Metastatic spinal cord compression			
Spinal Infections – Discitis / Osteomyelitis / Epidural Abscess			
Low Back Pain			
Disc Herniation / Sciatica			
Spinal Stenosis			
Spondylolisthesis			
Neck Pain / Whiplash			
Cervical Myelopathy			
Scoliosis / Kyphosis			
Multiple Sclerosis / Motor Neuron Disease / Transverse Myelitis etc.			
Ankylosing spondylitis/ Rheumatoid Arthritis/ Inflammatory Arthritis etc			

5. Would you be willing to collaborate and share your undergraduate spinal education resources? Yes / No

4. Royal College of Radiology

Neurological disease	Head injury Stroke Severe headache Seizures Altered consciousness Spinal cord compression			
Musculoskeletal disease	Bone pain Joint pain Bone and soft tissue trauma Bone and soft tissue infection Spinal injury Neck and back pain			
	calcification			
Skeletal radiograph	Bone fractures Pelvis Femoral neck Wrist/carpus/scaphoid Long bones Fractures involving joint/epiphyseal plate Joint dislocation Joint effusion Lipohaemarthrosis Fracture/dislocation of spine	SBA, EMQ	OSCE	OSCE, SBA, EMQ
Major trauma computed tomography (CT)	Head injury Bone and soft tissue trauma Spinal injury Thoracic injury Abdomino-pelvic trauma Acute vascular injury	SBA, EMQ	OSCE	OSCE, SBA, EMA

PARTICIPANT INFORMATION SHEET

Title: A comparison of spinal teaching for medical students across UK universities
You are being invited to take part in a research project. Before you decide whether or not to take part, it is important for you to understand why the research is being undertaken and what it will involve. Please take time to read the following information carefully and discuss it with others, if you wish.

Thank you for reading this.

1. What is the purpose of this research project?
I am a 3rd year medical student at Cardiff University and would like to undertake a collaborative study regarding the spinal teaching provided to undergraduate medical students across the UK. I will be conducting the study with the assistance of Mr Michael J H McCarthy Consultant Spinal Surgeon and Senior Lecturer in Cardiff, Wales and we have had ethical approval for the study from Cardiff University Medical School. Low back pain is exceedingly common and has a significant impact on the health of the nation and the UK economy. It is second only to depression and the common cold in General Practice. The aim of the research is to gain an understanding of the current spinal teaching provided to undergraduate medical students across the UK and to share that knowledge in order to improve standards and education.

2. Why have I been invited to take part?
You have been invited to take part in this study as part of a nation-wide study to look at spinal teaching to medical students, because you are responsible for and/or involved with curriculum design at a UK Medical School.

3. Do I have to take part?
No, your participation in this research project is entirely voluntary and it is up to you to decide whether or not to take part. If you decide not to take part, you do not have to explain your reasons and it will not affect your legal rights. You are free to withdraw your consent to participate in the research project at any time, without giving a reason.

4. What will taking part involve?
I would be very grateful if you would consider taking part by completing a simple 5-minute questionnaire

5. What are the possible benefits of taking part?
By taking part you will be helping to improve standards of teaching on the spine to UK medical students and hopefully prepare future doctors in their career in the NHS. In addition, we are happy to share our teaching materials and hope that participating Medical Schools will also contribute and exchange their teaching materials on this topic.

6. What are the possible risks of taking part?
All data will be kept anonymous so your university will not be able to be identified.

7. Will my taking part in this research project be kept confidential?
All information collected during the research project will be kept confidential and any personal information you provide will be managed in accordance with data protection legislation.
All data will be anonymised and stored on a password protected computer.

8. What happens to the data at the end of the research project?
At the end of the research project the data may be used in a publication. However, all data will be anonymised. University retention period for non-clinical studies is to keep all study data for a minimum period of 5 years following the end of the study or two years post-publication.

9. What will happen to the results of the research project?
By taking part in this study, you give consent for the results to be published. If you wish to see the results do not hesitate to get in contact with Isabelle Harris **(contact details below)**

10. What if there is a problem?
If you wish to complain or have grounds for concerns about any aspect of the manner in which you have been approached or treated during the course of this research, please contact Isabelle Harris (contact details below).

11. Who is organising this research project?
The research is organised by a year 3 Medical student and supervisor Michael J H McCarthy at Cardiff University

12. Who has reviewed this research project?
This research project has been reviewed and given a favourable opinion by the School of Medicine Research Ethics Committee.

13. Further information and contact details
If you have any questions regarding any aspect of the study then please do not hesitate to contact myself Ms Isabelle Harris (harrisie@cardiff.ac.uk) or Mr Michael J H McCarthy (mikemccarthy@spinedragon.com / mccarthymj1@cardiff.ac.uk / mike.mccarthy@wales.nhs.uk).

Thank you for considering taking part in this research project.

6. Email 1

I am a 3rd year medical student at Cardiff University and would like to undertake a collaborative study regarding the spinal teaching provided to undergraduate medical students across the UK. I will be conducting the study with the assistance of Mr Michael J H McCarthy Consultant Spinal Surgeon and Senior Lecturer in Cardiff, Wales and we have had ethical approval for the study from Cardiff University Medical School.

Low back pain is exceedingly common and has a significant impact on the health of the nation and the UK economy. It is second only to depression and the common cold in General Practice. The aim of the research is to gain an understanding of the current spinal teaching provided to undergraduate medical students across the UK and to share that knowledge in order to improve standards and education.

I would be very grateful if you would consider taking part by completing a simple 3-minute questionnaire (see web link below). The data will be entered into a password protected spreadsheet which we will share with all participants. The names of the participating Universities will be kept anonymous.

In addition, we are happy to share our teaching materials with you and hope that you will be willing to do the same in order that we can share our teaching experiences and improve education delivery.

By participating in the questionnaire, you will be providing consent to be a part of the study. You can choose to withdraw from the study / collaboration at any time. The results of this study may be presented, but the specific results from your University will not be identified.

If you have any questions regarding any aspect of the study then please do not hesitate to contact myself Ms Isabelle Harris (harrisie@cardiff.ac.uk) or Mr Michael J H McCarthy (mikemccarthy@spinedragon.com / mccarthymj1@cardiff.ac.uk / mike.mccarthy@wales.nhs.uk).

Please follow the web link to access the questionnaire.

https://docs.google.com/forms/d/e/1FAIpQLSdGV21_7HPJFumfB0iLzRUory0Ot-goJF_O0OgnxOEF1LzoLQ/viewform?usp=sf_link

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7. Email 2

I am a Consultant Spinal Surgeon in Cardiff and have been teaching Medical Students for over 20 years. Eight years ago I was part of a team tasked with developing and delivering a spinal curriculum focusing on low back pain to the medical students in Cardiff. We have run the module for the last seven years and it has been highly successful. When I was at medical school in Nottingham I can only recall limited clinical teaching on the spine (outside of the DR) and again I observed this at the Peninsula Medical School during my Registrar rotation. Interestingly, both areas have world renowned spinal surgery centres!

Low back and neck pain are the leading cause of disability in the UK (and most of the Western world). Each year around 1 in 15 of the general population will consult their GP about their back pain. In addition, sciatica has a prevalence of between 1% and 3% in the UK population. Despite this, it is an area of medicine that, I believe, is poorly taught to medical students and post graduates. I believe that we need to collect some robust data in order understand the current level of spinal teaching provided to medical students in the UK. This will allow us to address any shortfalls in education and ultimately improve the care for our patients.

To that end, I have worked with Miss Isabel Harris a 3rd Year Medical Student from Cardiff to develop a simple 5 minute questionnaire that she sent out to 36 UK Medical Schools academic leads / curriculum directors last week. To date, 16 Medical Schools have kindly completed the questionnaire. The questionnaire received Ethical approval from Cardiff University and the answers provided will be anonymised and kept strictly confidential. All of the participants will receive a copy of our findings. Our ultimate aim is to share knowledge in order to improve standards and education on this topic. We are keen to collaborate and hope that others will be willing to do the same in order that we can impart our teaching experiences and improve education delivery. With this in mind, we have created a Dropbox containing some of our spinal teaching materials and hope that others will contribute.

We would be very grateful if you would consider completing the questionnaire:

https://docs.google.com/forms/d/e/1FAIpQLSdGV21_7HPJFumfB0iLzRUory0Ot-goJF_O0OgnxOEF1LzoLQ/viewform?usp=sf_link

Please let us know if you would like the Dropbox link.

Yours sincerely,

Mike

Acknowledgment

I would like to thank my supervisor, Mr McCarthy who has provided me with support and assistance throughout the SSC period. I would also like to thank the spinal team at UHW who spent time teaching me and providing me with useful insight.

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