Current teaching of paediatric musculoskeletal medicine within UK medical schools—a need for change

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Objectives. Doctors involved in the assessment of children have low confidence in their clinical skills within paediatric musculoskeletal (pMSK) medicine and demonstrate poor performance in clinical practice. Core paediatric clinical skills are taught within undergraduate child health teaching but the extent and content of pMSK clinical skills teaching within medical schools is currently unknown. The aim of this study was to describe current pMSK teaching content within child health teaching at UK medical schools.

Methods. Structured questionnaires were sent to child health leads at all medical schools within the UK delivering clinical teaching (n = 30).

Results. Child health teaching was delivered in all responding medical schools (n = 23/30) predominantly by paediatricians (consultants and senior trainees) and within secondary care. pMSK clinical skills teaching was included in 9/23, delivered predominantly within lectures and featured uncommonly in assessment (6/23, 26%). pMSK clinical skills were reported as being less well taught than other bodily systems, although the majority ranked pMSK to be of equal importance, with the exception of development.

Conclusions. pMSK clinical skills medicine is not part of core teaching within child health in the majority of UK medical schools. There is a need to understand the barriers to effective pMSK clinical skills teaching, to achieve consensus on what should be taught and develop resources to facilitate teaching at undergraduate level.

Keywords: Medical education, Paediatrics, Musculoskeletal, Undergraduate teaching.

Background

Core clinical skills are acquired at medical school with further improvement within postgraduate training and clinical practice. Although there is currently no standard medical school curriculum in the UK, attainment of clinical and practical skills is one of the integral principles proposed by the General Medical Council (GMC) (www.gmc.org.uk) [1]. Emphasis on musculoskeletal (MSK) medicine within undergraduate teaching is a key recommendation from the GMC but the focus has been on adult MSK clinical skills which are routinely taught as part of core teaching [2]. However, children are not ‘small adults’ and the approach to clinical evaluation is quite different [3]. It cannot be assumed that MSK teaching in adult patients will translate into competence in the assessment of children; this is exemplified by observations that many doctors involved in the assessment of children, including those in primary and secondary care, lack confidence in their paediatric MSK (pMSK) clinical skills despite many having experienced adult MSK clinical teaching [4]. Teaching of adult MSK clinical skills has been greatly facilitated by the structured adult MSK screening examination called GALS (Gait, Arms, Legs and Spine) [5] and the development of REMS (Regional Examination of the MSK System) [6]. In recognition of the clinical assessment being different from adults, an MSK screening examination for school-aged children, called pGALS has been validated [7], with a free DVD and supplementary information being available (www.arc.org.uk).

Children with MSK problems invariably present to primary care or various secondary care specialities rather than sub-specialists directly. In the UK, many qualifying doctors enter Foundation Programmes (http://www.foundationprogramme.nhs.uk) involving the care of children within various specialties (such as paediatrics, accident and emergency medicine, primary care and surgery). pMSK presentations are a common clinical scenario (reported in 4–30% of the children and adolescents [8, 9]) and although the majority will be benign and self-limiting, MSK features may be the presentation of severe and even life-threatening illnesses [such as leukaemia, osteomyelitis, muscular dystrophies, vasculitis, juvenile idiopathic arthritis (JIA) or non-accidental injury (NAI)]. It is known that delay in access to care is well reported in childhood diseases with MSK features (such as cancer, muscular dystrophy and JIA [10–13]) and although such delay is multi-factorial, the clinical assessment and appropriateness of management are likely to be contributory.

The common and potentially significant MSK presentations in children warrant that qualifying doctors need to have acquired core paediatric clinical skills (including pMSK medicine) at undergraduate level. A previous survey of UK medical schools has shown that reference to pMSK medicine is not included within adult MSK teaching [2]. A core curriculum which includes pMSK clinical skills has been proposed for US medical schools (www.cosmp.org), although there is no equivalent as yet in the UK. The aim of our study was to describe the current status of pMSK clinical teaching in UK medical schools, both in terms of content, delivery and assessment. This information will inform curriculum developers in the future, particularly in the light of the emergence of Foundation Programmes, the need for graduating doctors to have appropriate clinical skills and the development of pMSK clinical tools to facilitate clinical teaching.

Methods

Child health leads at all UK medical schools which deliver clinical teaching were sent an electronic questionnaire, with reminders sent at 2 weeks and 1 month later. An explanatory cover letter assured confidentiality for all participants and their respective medical schools. The structured questionnaire was piloted for content validity and was similar in design to previous surveys on undergraduate teaching [2, 14, 15]. Questions referred to generic child health teaching (GCHT) such as availability of learning outcomes, clinical environment for delivery, student numbers, modes of delivery for teaching and assessment, and available support for teachers. Questions specific to pMSK teaching included lecture content, provision of clinical skills teaching and assessment. The respondents were also asked, using a Likert scale, to rank the quality and relative importance of pMSK teaching compared with other bodily systems. The project was registered with the

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Trust, deemed an audit of current teaching practice and exempted from ethical approval.

Results

Replies were obtained from child health leads (all paediatricians) within 23/30 (77%) medical schools (after two reminders) with representation across England (18/23, 78%), Scotland (3/23, 13%), Wales (1/23, 4%) and Northern Ireland (1/23, 4%), and covering various models of medical education [problem-based learning (6/23, 26%), integrated or ‘systems-based’ learning (14/23, 61%) and traditional courses (2/23, 9%)] with separate pre-clinical and clinical components within a 5-year undergraduate course. Amongst the responders, GCHT was delivered at all medical schools, taught mainly in the latter years [i.e. year 4 (15/23, 65%) and year 5 (10/23, 43%)], with less exposure in the earlier years [i.e. year 1 (1/23, 4%), year 2 (2/23, 9%) and year 3 (7/23, 30%)]. Students were predominantly taught in groups [median 16 (range 4–60)] and within secondary care [teaching hospital and district general hospitals (21/23, 91%)] with less exposure in primary care (13/23, 57%). Most GCHT was delivered by consultants (23/23, 100%) and specialist registrars in paediatrics (19/23, 83%), with less involvement by primary care (10/23, 43%), nursing colleagues (10/23, 43%) or patient educators (4/23, 17%). Support for clinical teachers was available in 14/23 child health departments, including support methods of teaching (13/23, 57%) and provision of pre-prepared materials [slide presentations (10/23, 43%), DVDs (9/23, 39%) and case summaries for discussion (5/23, 65%)].

Clinical environments for GCHT involved inpatient wards and outpatient clinics (n = 23, 100%), with less use of community settings (n = 5/23, 22%), such as development centres, nurseries and disability schools. In teaching approaches, the majority used problem-based learning (21/23, 91%), case studies (20/23, 87%) and seminars (19/23, 83%). Student Selected Components (SSC) were offered at all medical schools for child health, with few (5/23, 22%) being available in paediatric rheumatology [2/5 were in larger centres delivering Higher Specialist (Grid) Training in paediatric rheumatology (www.RCPCH.org)]. Assessment of GCHT (Fig. 1) incorporated both formative and summative assessments [Objective Structured Clinical Examination (OSCE)], written examination and global impressions during their attachment.

pMSK clinical skills teaching was delivered within a minority of child health curricula [pMSK history alone (9/23, 39%), screening examination (8/23, 35%) and regional examination (5/23, 22%)] and where specified, was delivered within lectures in 9/23 (39%). pMSK content was included within assessment in 6/23 (26%) medical schools. Three child health leads were aware of pMSK teaching being covered in adult MSK teaching, although the content did not include pMSK clinical skills. The majority of medical schools (83%) defined GCHT learning outcomes with ‘core presentations’, with the limping child in 13/23 (56%). Of the formal pMSK lectures, recorded content included orthopaedic hip problems (Perthes disease, slipped upper femoral epiphysis, developmental dysplasia of the hip), NAI, and bone and joint sepsis. Amongst the child health leads, there was a consensus that pMSK clinical teaching, in relation to other bodily systems, was less well taught with the exception of development, eyes and skin (Fig. 2). Nonetheless, the majority rated pMSK clinical teaching to be equally important to other systems (Fig. 3). Free text comments suggested perceived barriers to delivery of pMSK clinical teaching and included pressures on existing curricula, lack of teaching time and the focus of teaching being on acute paediatric presentations. The majority of the respondents (16/23, 70%) were aware of educational resources to facilitate MSK clinical skills teaching (www.arc.org.uk) with a minority (6/23, 26%) using the pGALS DVD. The majority (17/23, 74%) were in favour of a more detailed ‘teaching package’ to facilitate pMSK clinical teaching.

Discussion

This is the first UK survey to describe pMSK clinical teaching at undergraduate level, and shows that pMSK clinical skills are currently taught at a minority of medical schools with marked variability in content and delivery and were rarely included in learning outcomes or assessments. These observations, and the adage that ‘assessment drives learning’ [16], suggest that pMSK clinical skills are not perceived as being important to learn, with little incentive for teachers or students to acquire pMSK clinical skills. These results are likely to be representative of child health teaching across the UK with feedback from different types of medical schools. Furthermore, the study methodology used was similar to previous studies of teaching in other specialties [14, 15, 17], with a response rate acceptable for a questionnaire study and optimized by strategies such as pre-testing, reminders and personalized cover letters [18].
We believe that clinical skills pertinent to children are optimally taught within GCHT, both to reinforce their importance in clinical practice and also to emphasize the differences with adults. GCHT is currently mainly taught by consultants and senior training doctors in paediatrics within traditional environments of inpatient wards and outpatient clinics. Notably, there is less teaching by primary care doctors, nurses, therapists, or patient educators, presumably reflecting the current focus being on acute paediatrics in hospital rather than the child in the community with chronic disease or common clinical scenarios that may not necessarily require referral to secondary care. It is important that GCHT is relevant to subsequent clinical practice and is delivered by clinicians working in such clinical environments. Core paediatric clinical skills, including pMSK, should be taught by paediatricians and also clinicians who see children routinely in their clinical practice, namely primary care doctors, nurse practitioners and physical therapists; such individuals can facilitate clinical teaching in various health care environments and ensure that students are exposed to the broad spectrum of pMSK medicine and not just acute scenarios in the hospital setting. However, teachers within GCHT are likely to require additional support given that many doctors from paediatrics and primary care are not confident in their pMSK clinical skills [4], and it has been shown that clinicians in adult medicine (and who are not rheumatologists or orthopaedic surgeons) rank their ability to teach MSK clinical skills to be lowest compared with the main other bodily systems with their confidence in teaching being inversely related to the frequency of performing the skill in their clinical practice [20]. Our study shows that currently there is little support for clinical educators delivering pMSK medicine but that provision of a teaching package would be welcomed. It is important that pMSK sub-specialists (i.e., paediatric rheumatologists and paediatric orthopaedic surgeons) are involved in GCHT although their input is currently not commonplace [4], presumably as they are often located in larger centres which may be detached from mainstream GCHT teaching in peripheral hospitals.

Changing the current status of pMSK teaching in the UK is a challenge that requires several issues to be addressed. There needs to be consensus about pMSK learning outcomes to be acquired in undergraduate training; they need to include clinical skills and knowledge relevant to the broad spectrum of pMSK presentations and need to take into account views of doctors in primary, community and secondary care. The availability of pGALS and supportive educational resources will raise awareness of the need to distinguish paediatric from adult MSK teaching, but further resources are required to encourage and support other health care professionals to become clinical teachers. It is important that pMSK learning outcomes are included in assessment, with appropriate validated tools used and akin to those used in postgraduate training; pMSK clinical skills and knowledge are now integral to general paediatric trainees within competency-based frameworks (www.rcpch.ac.uk). An increase in the availability of SSC options (as recommended by the GMC, and often a positive experience for students which may influence final career choice [21]), will increase exposure to pMSK medicine for students and as they are invariably offered by paediatric rheumatologists, this will provide opportunity for greater collaboration with general paediatric colleagues and facilitate development of pMSK teaching.

We strongly believe that pMSK medicine should be integral to core paediatric clinical teaching and as with all other core skills, be delivered by general paediatricians and primary care doctors. There is a need to exploit and overcome potential barriers to pMSK clinical teaching, which includes the fact that many doctors currently involved in GCHT are not confident in their own pMSK clinical skills [4]. Consequently, in order to deliver improved pMSK clinical teaching, there is a need to ‘teach the teachers’ within paediatrics and primary care. This will require input from specialists within paediatric rheumatology and paediatric

Fig. 3. Child health leads’ perception of importance of pMSK clinical skills compared with other bodily systems.
orthopaedics, although currently within the UK there is inadequate clinical service provision of paediatric rheumatology and paediatric orthopaedic surgery with a paucity of clinical academic posts with emphasis on pMSK teaching. A co-ordinated national implementation strategy is required to provide medical schools with guidance based on evidence and consensus-based learning outcomes, assessments and educational resources, which need to be implemented and evaluated. At a local level it is important that specialists in pMSK medicine (rheumatology and orthopaedics) work with colleagues in general paediatrics and primary care and use clinical networks to facilitate opportunities for pMSK teaching and learning. Clearly, there is further work to be done with implications for organization and funding of the delivery of GCHT, but ultimately these important changes will improve the acquisition of appropriate pMSK clinical skills for graduating doctors and facilitate improved clinical assessment and appropriate clinical care for children presenting with MSK complaints.

What is already known on this topic?

- Delay in access to specialist care is observed in children with MSK conditions.
- Practising doctors report low self-confidence in their pMSK clinical skills.
- Graduating doctors are likely to encounter paediatric patients as part of the Foundation Programmes.

What does this study add?

- pMSK clinical teaching is not core in most UK medical schools with variable content and delivery and is infrequently included in assessment.
- Child health leads perceive MSK clinical skills to be as important as, but less well taught than, other bodily systems.
- There is a need to achieve consensus on learning outcomes for pMSK clinical teaching, for pMSK to be included in student assessments, and for further work to engage health care professionals other than doctors in clinical teaching and provide the appropriate support and training.
- There is a need to develop a national strategy to implement and evaluate changes to medical school curricula to include pMSK medicine.

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