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Musculoskeletal medicine in the USA: education and training of family physicians

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ABSTRACT

Musculoskeletal complaints account for approximately 10–20% of all visits to family physicians. Evidence suggests that there is little instruction provided in medical school, and inadequate instruction in family medicine residencies for future practice. This article reviews historical and current evidence regarding musculoskeletal medicine in medical education. The lack of studies evaluating the quality of musculoskeletal medical care delivered by family physicians needs to be addressed.

Keywords: curriculum, education medical, family practice, musculoskeletal system

Introduction

Identifying the curricular need for medical students and family medicine residents is a continuing challenge. As educators, we face similar challenges of providing a comprehensive and broad curriculum in medical schools as well as in family medicine residency programs. Post-residency success is then often measured by evaluating board certification rates which rely upon individual speciality boards to identify the important knowledge areas. But the question remains; can we do better? When practice and patient characteristics come into view, should we adjust curricula to represent the demand and need for family physician's expertise? Do we have any quality of care indicators which demonstrate that current curricula and training are either adequate or inadequate? In this paper, I will outline historical and current information that suggests as a speciality, family medicine needs to look closely at current curricular programmes regarding musculoskeletal medicine, and the need for quality of care studies.

The need

The majority of medical care in the US is provided in the outpatient setting.[1] This was true 40 years ago, and remains true today. Furthermore, patient visits to primary care physicians account for 52% of the ambulatory medical care in the US with family physicians providing over half of this care.[2]

In the primary care setting, musculoskeletal complaints are common. Estimates suggest that between 10 and 23% of outpatient visits to primary care physicians involve a musculoskeletal complaint.[2–6] This figure is unchanged from data obtained 20 years ago.[4,7] Conditions such as low back pain, sprains, strains, osteoarthritis, bursitis, tenosynovitis, and fractures account for a large portion of the musculoskeletal complaints in family medicine. Furthermore, referral patterns of US family physicians suggest that orthopaedic surgeons receive the greatest number of referrals made to subspecialists.[3]

The future need is no less great. At the present, approximately 60% of the US adult population is sedentary.[8] Among those who become physically active or embark upon exercise programmes, one-quarter will sustain an injury.[9] Nearly all of these injuries will be activity-related, and one-third of those injured will permanently stop their activity as a result.[9] Clearly, if we are successful from the standpoint of a public health agenda in engaging more of the adult population in activity or exercise programmes, we ought to expect to see more musculoskeletal injuries in the outpatient setting.

Medical school curricula

Relatively little is known about what is taught in the medical school curriculum regarding musculoskeletal medicine. Freedman and Bernstein found that only 18% of US medical school graduates in their first year of orthopaedic surgery residency were able to obtain a passing score on a short test of essential musculoskeletal medicine.[10] Pinney and Regan showed that Canadian medical schools spend an average of 2% of the curriculum devoted to musculoskeletal medicine.[11] In related areas of exercise and physical activity there is very little taught in the medical school curriculum.[12,13]

Yet, ample opportunity exists in medical school curricula for teaching of musculoskeletal medicine. Coursework in physical diagnosis is required for medical students. Clinical rotations in primary care, including family medicine, internal medicine and paediatrics are also required. Data from Jefferson Medical College demonstrated that 'back strain' was the third most frequently encountered diagnosis during the family medicine clerkship, and 'extremity trauma' was the ninth most frequently encountered diagnosis during the paediatrics clerkship.[14] Additionally, Saywell and colleagues demonstrated that third year medical students rotating in family medicine were exposed to musculoskeletal disorders in 10% of the population.[5] Yet, these same students reported much lower confidence in dealing with musculoskeletal versus non-musculoskeletal complaints. Given the high rate of musculoskeletal complaints presenting in these settings it appears that there should be adequate opportunities to provide instruction to medical students.

Residency education

Indirect measures of the adequacy of musculoskeletal education in primary care residencies suggest that this area of education is inadequate to prepare physicians for practice.[15–17] Twenty-five years ago Sneiderman reported that one-half of practising family physicians surveyed in North Carolina felt their training in orthopaedics was inadequate.[16] In a more recent survey of family physicians who completed residency training in the northwest US, 96% of graduates practice orthopaedics though only 24% felt well-prepared to do this based on their residency training experience.[17] Matheny and colleagues surveyed 351 graduating family medicine residents from across the United States.[18] They found that fracture care and casting experience were quite limited among graduating residents, and that residents reported significantly greater confidence in the examination, diagnosis and management of non-musculoskeletal conditions as compared to musculoskeletal conditions. Of no great surprise, those residents who completed additional orthopaedic training reported significantly more confidence in physical examination, diagnosis, radiographic interpretation, and management of musculoskeletal conditions.[18] Furthermore, in a recent survey regarding a four-year family medicine residency both interns and practising physicians ranked sports medicine and musculoskeletal disorders as top areas for additional training.[19]

This, albeit indirect, evidence suggests that residency training is not uniformly providing a strong basis in musculoskeletal medicine for family medicine residents. The Accreditation Council for Graduate Medical Education requires 140 hours of orthopaedics training in family medicine residencies, exclusive of any training in sports medicine. The recognition of the importance of orthopaedics or musculoskeletal medicine has thus been achieved. But are we limiting the venues in which musculoskeletal medicine can be taught?

Quality of musculoskeletal care

Unfortunately, there is a paucity of information available regarding quality of musculoskeletal medical care provided by primary care physicians. General findings of quality of care among Canadian family physicians demonstrate that residency training is an important factor leading to higher quality of patient care as compared to non-residency-trained physicians.[20] A more recent study using a chart audit for patients of primary care physicians referred for rheumatology consultation, demonstrated generally low agreement between the two specialities in terms of diagnosis.[21] However, there was no information obtained regarding the effect on patient outcome or morbidity secondary to the lack of agreement.

A related study, while not directly applicable to primary care, does have theoretical applications regarding the primary care management of musculoskeletal disorders. Daker-White and colleagues compared the use of speciality-trained physiotherapists to orthopaedic junior faculty for the evaluation and management of a randomised sample of referred patients.[22] Outcomes were similar in all areas except for patient satisfaction (higher in the physiotherapists' group) and direct hospital costs (lower in the physiotherapists' group) due to lower use of radiography and fewer referrals for ortho-

paedic surgery. The findings from this study could support either the use of well-trained primary care physicians to manage musculoskeletal problems prior to referral to orthopaedic surgery, or additional training for primary care physicians in the management of musculoskeletal problems.

Conclusion

Undergraduate medical education may be failing in providing sound instruction to medical students in musculoskeletal medicine. This is in stark contrast to the commonality of these complaints in primary care. However, students should clearly have opportunities to learn during their primary care clinical rotations; but are they being taught? Family medicine residents, as well as practising physicians have cited deficiencies in learning enough musculoskeletal medicine during residency training. This deficiency may be propagated to medical students in that our family medicine teachers may not feel comfortable in teaching musculoskeletal medicine during these clinical encounters.

Regarding residency training, more needs to be done. Clearly the importance of musculoskeletal medicine is recognised in family medicine residency training. Yet, several questions need to be addressed. What is the best musculoskeletal medicine training? What types of clinical exposure do residents receive during an orthopaedic rotation? A serious concern that needs to be evaluated is whether residents are exposed to common orthopaedic/musculoskeletal problems in an orthopaedist's office that coincide with those problems they will encounter in practice? Individual rotations may be focused strongly on operative and post-operative care rather than office-based care. The value of this type of experience has not been elucidated. Additionally, the barriers that exist to separating primary care sports medicine from orthopaedics may not be justified. Lastly, the question of whether 140 hours of orthopaedic training is sufficient is also unclear.

Since family physicians and family medicine residents commonly evaluate patients with musculoskeletal complaints, clinical exposure to these types of problems should be expected in the continuity experience during residency training. Gilchrist and colleagues found strong similarities between residency training programmes in northeastern Ohio and the National Ambulatory Medical Care Survey by diagnoses.[23] Residents saw the same percentage of patients with back pain, knee symptoms, osteoarthritis, and sprains/strains as noted nationally. This raises two questions; are faculty providing resident education during these visits, and is this longitudinal clinical approach the only, or the best way for residents to learn?

Providing adequate care for patients with musculoskeletal complaints requires a knowledge base of musculoskeletal conditions and management options. In other words, inadequate training in musculoskeletal medicine can be expected to lead to suboptimal patient management. Are we doing what is needed? There is no clear evidence to date that we are being successful. Others have called for an evaluation of this topic.[4,16,18] The 'winds of change' are blowing again.

The principle lack of high-quality outcome studies and quality of care studies is likely to impede any rapid change in this area. In order to garnish support for change we will need to address these issues in well-designed studies.

Furthermore, considering that injury can occur in physically active individuals and this is a common reason for the discontinuation of activity, primary care physicians may need to expand their support for physical activity from 'promotion' to include 'management of injury' as well. It would be a sad commentary to succeed in obtaining higher levels of physical activity and exercise in the population, only to fail in providing accurate, rapid, and adequate management for the injuries that might be expected to occur. Residency programmes can be instrumental in providing this competency to our future family physicians, and stand to benefit from a close evaluation of their musculoskeletal training.

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