



# Public health research in musculoskeletal science: the role of the orthopaedic surgeons

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About 1.3 billion people globally, or 16% of the world population, are affected by a musculoskeletal disease, and 121,000 people died due to a musculoskeletal disease in 2017 alone [1].

Low back pain and road injuries rank persistently in the top ten causes of disability globally and across age groups, making it a true public health challenge [2]. However, in practice, musculoskeletal health remains absent from the public research agenda and national surveys leading to a lack of data and understanding of its true burden and impact [3]. Recently launched initiatives to bridge the data gap are mainly driven by fields other than orthopaedics [4].

A public health approach to musculoskeletal research looks beyond the individual patient and takes the wider society into consideration. It assesses for example the impact of social determinants of health and health literacy on treatment outcomes and (cost-)effectiveness of treatments at a societal level to inform national or regional priority setting and health financing efforts [5]. In order to showcase the effectiveness and efficiency of orthopaedic care, real-world data generation is necessary. Efforts have been made in these domains, but data availability remains low in the scientific literature [6]. Many musculoskeletal health policy studies still report data obtained under ideal circumstances and assumptions, such as 100% attendance compliance rates for screening or treatment [7, 8].

Cost-effectiveness studies will need to include adjustments for patients' non-adherence to prescribed treatment protocols, and address different health behaviours across communities and income groups, to fully grasp the potential benefit the funding of orthopaedic care can bring to a

community. In order to adjust effectiveness studies' outcomes for patients' non-adherence, studies looking into the impact of social determinants of health of musculoskeletal health and orthopaedic treatment outcomes are necessary. Collaborations outside departments of orthopaedic surgery will be necessary to capture data from patients who never reach an orthopaedic surgeon or never return after an initial first contact.

The need for collaborations between orthopedic surgeons and the public health community, instead of merely outsourcing musculoskeletal public health research to the public health community, has been made clear by the Global Burden of Disease studies. In their studies, the causes of musculoskeletal disability are subdivided in low back pain, neck pain, osteoarthritis, gout, rheumatoid arthritis, and others [2]. It remains unclear how the decision is made to allocate disability weightage to low back/neck pain or to osteoarthritis in degenerative spine disease, a non-negligible group of patients. Given that the numbers generated by the Global Burden of Disease studies are considered by many governments in their priority setting and health financing strategies, it is of utmost importance to the orthopaedic community and their patients that these numbers adequately reflect clinical reality.

As a way forward, we recommend the orthopedic community to consider the following solutions:

- Support interdisciplinary research endeavors within orthopaedic departments, both financially and with protected time, and include interdisciplinary research as a topic in teaching sessions for residents and fellows
- Value public health research and clinical research equally in orthopaedics when considering people for promotions or training positions
- Actively reach out to institutions generating public health policy or data, such as the Global Burden of Disease group or national equivalents, to have a seat at the decision-making table and participate in protocol and guideline development

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- Improve the collection of socio-economic data of study participants and report it as part of the study results, or consider the variables (such as level of poverty or immigration status) as potential confounders that can influence treatment results

With aging communities globally and an increasing need for surgical treatments for musculoskeletal diseases, the time to act is now. It will take a bold effort of everyone in the orthopaedic community to generate and support musculoskeletal public health research, but we are hopeful that an outstretched hand from the orthopaedic community will be met by increased funding and increased recognition of the need to invest in musculoskeletal health and orthopaedic care globally.

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