Qualitative methods: the missing link in orthopaedic research

From South West London Elective Orthopaedic Centre, Epsom and St Helier University Hospitals NHS Trust, London, United Kingdom.

Cite this article:
Bone Joint Res 2025;14(1):
16–19.

DOI: 10.1302/2046-3758.
141.BJR-2024-0501

Correspondence should be sent to Samantha Jones
samantha.jones140@nhs.net

S. Jones,[1,2,3] S. Tyson[2]

[1]South West London Elective Orthopaedic Centre (SWLEOC), Epsom and St Helier University Hospitals NHS Trust, London, United Kingdom
[2]The Division of Nursing, Midwifery and Social Work, School of Health Sciences, Faculty of Biology Medicine and Health, The University of Manchester, London, United Kingdom
[3]Population Health Research Institute, St George's School of Health and Medical Sciences, City St George's, University of London, London, United Kingdom

Introduction

Publication trends across surgical and orthopaedic research indicate a predominance of quantitative methods and an absence of qualitative studies.[1-3] Traditionally, medical professionals have favoured positivist research methods dependent on quantitative measurements, believing that only these were scientifically robust.[4,5] This approach is designed to answer closed questions such as "how much" or "how many".[6] Data are numerical and attained through primary investigation or experiments.[5] A quantitative hypothesis predicts an expected relationship between clearly defined variables often based on preliminary evidence or knowledge. In contrast, qualitative methods represent an interpretive approach, based on the assumption that reality is subjective.[6,7] Questions are open with the aim of exploring experiences, feelings, values, beliefs, and perspectives to understand meanings, complex relationships, decision-making processes, and the organization of our world, i.e. "why and how things happen".[6-9] The data are narrative in the form of audio, text, or even images collected using semi-structured interviews, observations, focus groups, or existing documents.[5,7,8]

Over the past several decades, there has been growing acceptance of qualitative research approaches and their applications.[6,8,9] This coincides with the emergence of the biopsychosocial model of healthcare, which recognizes the multifactorial nature of musculoskeletal disease and the necessity for adopting a multidisciplinary approach to achieve holistic integrated care.[10,11] The additional impetus for qualitative research is the understanding that effective healthcare should be personalized to patients' needs, which requires a range of experiences to be understood and accommodated.[12–14] This may include the perspectives of patients, relatives, carers, and clinicians.[12,13] Consequently, a diverse evidence base which explains areas that cannot be addressed solely by quantitative research designs is needed to fully inform clinical practice. This summary explores the barriers and facilitators to using qualitative approaches, and their potential to advance evidence-based orthopaedic practice.

Impact of biopsychosocial model

The main barrier to implementing qualitative or mixed (qualitative and quantitative) methods in orthopaedic research relates to the historic predominance of the biomedical model of healthcare.[11,15,16] This assumes that patients' symptoms and disabilities arise purely from an orthopaedic pathology.[11,14,17] Therefore, research questions focus on the efficacy of treatments and establishing causal relationships which call for quantitative designs.[1,15] However, despite the evidence for efficacy of orthopaedic surgery, patients have variable recoveries and outcomes. Although most recover, some experience little or no change, or deteriorate after surgery.[11,18,19] For example, a systematic review shows that up to 20% of patients continue to suffer chronic pain after a knee arthroplasty.[18] Consideration of the biopsychosocial model helps to explain these findings. The principles underpinning the model offer a more holistic approach to care through recognition of the complex interaction between biological,

psychological, and social factors in people's health.[10,11,15,16] It is particularly relevant to orthopaedics because of the high prevalence of long-term musculoskeletal diseases which are influenced by these multidimensional factors.[16] The use of qualitative methods can enable implementation of the biopsychosocial model. By exploring patients' lived experiences and opinions, we can better understand the behavioural, emotional, and social processes that impact on the efficacy of implementing interventions in clinical practice.[10,14,16] Such insights put "flesh on the bones of the quantitative results bringing them to life through in-depth case elaboration".[20] For example, the Support and Treatment after Replacement (STAR) study group conducted semi-structured interviews with patients to understand why they developed chronic pain after knee arthroplasty,[19] and make sense of the numerical data from the previously mentioned systematic review.[18] Patients reported difficulties integrating the knee prosthesis as part of their body, often viewing it as "alien" or "not part of themselves".[19] They also felt unprepared for the severity and impact of postoperative pain, as well as the demands of recovery.[21] Consequently, a multifaceted and personalized pathway for chronic postoperative knee pain was developed to help patients accept their new knee joint and manage such sensations.[22] This composed of referrals to existing NHS services targeted towards the potential causes of the underlying pain and follow-up phone calls with an extended scope practitioner.[22] A pragmatic, mixed methods randomized controlled trial was then used to assess the clinical effectiveness of this pathway.[22] Outcomes assessment included participant interviews about the quality, content, and context of the intervention, including which aspects helped them control their pain.[21] Patients reported that they expected to receive this type of care and valued the reassurance from healthcare professionals, particularly the opportunity to discuss the possible causes of their pain and how to manage it.[21] Interviews with healthcare professionals who delivered the pathway showed that they valued its patient-centredness.[23] Collectively, the qualitative data enabled the research team to determine factors influencing adherence, feasibility, and acceptability of the pathway to inform its future implementation into practice.[21,23,24]

A limitation of the biomedical model is its narrow scope of practice.[14] The role of patients is out of step with modern practice viewing them as passive recipients of decisions made by healthcare professionals.[11,14] This is taken to an extreme in quantitative research, where participants are traditionally referred to as 'subjects' to whom the experimental conditions are applied. However, modern healthcare encourages self-efficacy and patients' active involvement in their care.[11] For example, NICE guideline [NG157] for joint arthroplasty surgery recommends that rehabilitation after discharge from hospital should be self-directed by patients,[25] reflecting a biopsychosocial approach.[10,14] As patients are encouraged and empowered to take more responsibility for their health and recovery, it is increasingly important to understand how to meet their needs, which requires qualitative methods.[14] Here, the patients/participants have a different role in that they are recognized as experts in their condition, and the aim is to allow their voice to be heard.[26] Increasingly, this is evolving into co-production processes whereby researchers, healthcare professionals, patients, and members of the public work in partnership to improve care.[26] The latter can be used to inform not only the development of intervention, but the actual research processes themselves.

Barriers to implementing qualitative research

Despite the benefits of biopsychosocial model and qualitative clinical research, many healthcare professionals question the feasibility of conducting this type of research in practice and/or lack the skills and confidence to apply the approach.[9] Criticisms or speculation about rigour and trustworthiness of these approaches occur when people do not understand the principles involved.[1,9] For example, qualitative studies use relatively small samples of participants identified through processes such as purposively sampling to best be able to provide the richness (theoretical depth) of data needed to answer the research question.[1,27] Qualitative research often uses the concept of information power to guide sample size. That is, the greater the information held by participants, the lower the number of participants needed.[27] Unlike quantitative methods, adding more participants does not strengthen the data or the theories derived. This is because the richness of the data and its ability to answer the research question drives the sample size, rather than calculations to achieve statistical representation and generalizability.[1,7,27]

Data analysis is an additional area where lack of insight limits understanding, as well as the clinical application of qualitative findings. Qualitative analysis is based on the principles of coding data to identify patterns and themes, which are iteratively refined throughout the analysis to develop theories to explain the study findings.[7] These often require interpretation to understand how they apply to the clinical context.[9] This differs from quantitative analysis, which aims to test a hypothesis. Research processes are often linear with a distinct endpoint and produce relatively prescriptive messages and recommendations.[6] Neither approach is better or worse than the other; they are different methods to address distinct, but related questions. When combined, they can provide a much wider and deeper understanding of the patients' difficulties and how to effectively address them. Finally, the lack of integration of qualitative methods into formal curricula, medical training programmes, and general research methods courses[8,9] leads to lack of knowledge, skill, and confidence to apply and develop expertise in this approach.[1,9] These problems are further compounded by the limited number of qualitative publications within orthopaedics, thereby reducing familiarity with the approach.[1-3]

Building qualitative research capacity and capability in orthopaedics is clearly needed, particularly to complement clinical trials.[28] This requires bringing together professionals from a variety of methodological backgrounds to develop collaborative multidisciplinary clinical research teams.[29,30] The development of targeted funding opportunities such as the National Institute for Health and Care Research Integrated Clinical Academic Programme and Health Education England's Clinical Academic Career's Framework highlights the value of diverse research teams with expertise in mixed methodologies,[31] thus creating research leaders with the right skill mix to break down the barriers and realize the benefits outlined above.

In conclusion, this summary illustrates the imbalance between quantitative and qualitative methods in orthopaedic research, and the benefits of adopting qualitative designs

into a mixed methods research approach. To achieve this, a paradigm shift is needed to embrace a biopsychosocial model, incorporate a wider range of research methodologies in training at all levels, and build capability and capacity.

References

1. **Beaton DE**, **Clark JP**. Qualitative research: a review of methods with use of examples from the total knee replacement literature. *J Bone Joint Surg Am*. 2009;91 Suppl 3-A:107–112.
2. **Lum ZC**, **Pereira GC**, **Giordani M**, **Meehan JP**. Top 100 most cited articles in orthopaedic surgery: an update: updated top 100 orthopaedic articles. *J Orthop*. 2020;19:132–137.
3. **Weinerman J**, **Costello JP 2nd**, **Lizardi JJ**, **et al**. Characteristics and trends of the most cited arthroplasty articles in the Journal of Bone and Joint Surgery. *Orthop Rev (Pavia)*. 2022;14(4):38437.
4. **Howard D**, **Davis P**. The use of qualitative research methodology in orthopaedics – tell it as it is. *J Orthop Nurs*. 2002;6(3):135–139.
5. **Pyo J**, **Lee W**, **Choi EY**, **Jang SG**, **Ock M**. Qualitative research in healthcare: necessity and characteristics. *J Prev Med Public Health*. 2023;56(1):12–20.
6. **Cypress BS**. Qualitative research: the "what," "why," "who," and "how"! *Dimens Crit Care Nurs*. 2015;34(6):356–361.
7. **Agius SJ**. Qualitative research: its value and applicability. *Psychiatrist*. 2013;37(6):204–206.
8. **Rasmussen P**, **McLiesh P**. Understanding research: qualitative research in orthopaedic and trauma nursing. *Int J Orthop Trauma Nurs*. 2019;32:41–47.
9. **Ghirotto L**, **De Panfilis L**, **Di Leo S**. Health professionals learning qualitative research in their workplace: a focused ethnography. *BMC Med Educ*. 2020;20(1):269.
10. **Wade DT**, **Halligan PW**. The biopsychosocial model of illness: a model whose time has come. *Clin Rehabil*. 2017;31(8):995–1004.
11. **Ayers DC**, **Franklin PD**, **Ring DC**. The role of emotional health in functional outcomes after orthopaedic surgery: extending the biopsychosocial model to orthopaedics: AOA critical issues. *J Bone Joint Surg Am*. 2013;95-A(21):e165.
12. **Galloway AM**, **Pini S**, **Holton C**, **et al**. "Waiting for the best day of your life". A qualitative interview study of patients' and clinicians' experiences of Perthes' disease. *Bone Jt Open*. 2023;4(10):735–741.
13. **Theunissen WWES**, **Van der Steen MC**, **Van Veen MR**, **Van Douveren FQMP**, **Witlox MA**, **Tolk JJ**. Strategies to optimize the information provision for parents of children with developmental dysplasia of the hip. *Bone Jt Open*. 2023;4(7):496–506.
14. **Xiao X**, **Song H**, **Sang T**, **Wu Z**, **Xie Y**, **Yang Q**. Analysis of real-world implementation of the biopsychosocial approach to healthcare: evidence from a combination of qualitative and quantitative methods. *Front Psychiatry*. 2021;12:725596.
15. **Doorley JD**, **Fishbein NS**, **Greenberg J**, **et al**. How do orthopaedic providers conceptualize good patient outcomes and their barriers and facilitators after acute injury? A qualitative study. *Clin Orthop Relat Res*. 2023;481(6):1088–1100.
16. **Speerin R**, **Needs C**, **Chua J**, **et al**. Implementing models of care for musculoskeletal conditions in health systems to support value-based care. *Best Pract Res Clin Rheumatol*. 2020;34(5):101548.
17. **Engel GL**. The need for a new medical model: a challenge for biomedicine. *Science*. 1977;196(4286):129–136.
18. **Beswick AD**, **Wylde V**, **Gooberman-Hill R**, **Blom A**, **Dieppe P**. What proportion of patients report long-term pain after total hip or knee replacement for osteoarthritis? A systematic review of prospective studies in unselected patients. *BMJ Open*. 2012;2(1):e000435.
19. **Moore A**, **Eccleston C**, **Gooberman-Hill R**. "It's not my knee": understanding ongoing pain and discomfort after total knee replacement through re-embodiment. *Arthritis Care Res (Hoboken)*. 2022;74(6):975–981.
20. **Patton MQ**. *Qualitative Research & Evaluation Methods: Integrating Theory and Practice*. Fourth ed. Thousand Oaks, California: SAGE Publications, 2015.
21. **Moore A**, **Wylde V**, **Bruce J**, **et al**. Experiences of recovery and a new care pathway for people with pain after total knee replacement: qualitative research embedded in the STAR trial. *BMC Musculoskelet Disord*. 2022;23(1):451.
22. **Wylde V**, **Bertram W**, **Sanderson E**, **et al**. The STAR care pathway for patients with pain at 3 months after total knee replacement: a multicentre, pragmatic, randomised, controlled trial. *Lancet Rheumatol*. 2022;4(3):e188–e197.
23. **Moore AJ**, **Wylde V**, **Bertram W**, **Beswick AD**, **Howells N**, **Gooberman-Hill R**. Healthcare professionals' views on implementing the STAR care pathway for people with chronic pain after total knee replacement: a qualitative study. *PLoS One*. 2023;18(4):e0284406.
24. **Sekhon M**, **Cartwright M**, **Francis JJ**. Acceptability of healthcare interventions: an overview of reviews and development of a theoretical framework. *BMC Health Serv Res*. 2017;17(1):88.
25. **No authors listed**. Joint replacement (primary): hip, knee and shoulder: NICE guideline [NG157]. National Institute for Health and Care Excellence (NICE). 2020. https://www.nice.org.uk/guidance/ng157/chapter/Recommendations#postoperative-rehabilitation (date last accessed 11 December 2024).
26. **The Lancet Respiratory Medicine**. Placing the patient's voice centre stage in 2022. *Lancet Respir Med*. 2022;10(1):1.
27. **Malterud K**, **Siersma VD**, **Guassora AD**. Sample size in qualitative interview studies: guided by information power. *Qual Health Res*. 2016;26(13):1753–1760.
28. **Clement C**, **Edwards SL**, **Rapport F**, **Russell IT**, **Hutchings HA**. Exploring qualitative methods reported in registered trials and their yields (EQUITY): systematic review. *Trials*. 2018;19(1):589.
29. **Dalton A**, **Wolff K**, **Bekker B**. Multidisciplinary research as a complex system. *Int J Qual Methods*. 2021;20:1–11.
30. **Robinson P**. Designing and conducting mixed methods research. *Aust N Z J Public Health*. 2007;31(4):388.
31. **Jones D**, **Keenan AM**. The rise and rise of NMAHPs in UK clinical research. *Future Healthc J*. 2021;8(2):e195–e197.

Author information

S. Jones, PhD, MSc, BSc, Associate Director for Research at South West London Elective Orthopaedic Centre,
South West London Elective Orthopaedic Centre (SWLEOC), Epsom and St Helier University Hospitals NHS Trust, London, United Kingdom;
The Division of Nursing, Midwifery and Social Work, School of Health Sciences, Faculty of Biology Medicine and Health, The University of Manchester, London, United Kingdom;
Population Health Research Institute, St George's School of Health and Medical Sciences, City St George's, University of London, London, United Kingdom.

S. Tyson, FCSP, MSc, PhD, Honorary Professor, The Division of Nursing, Midwifery and Social Work, School of Health Sciences, Faculty of Biology Medicine and Health, The University of Manchester, London, United Kingdom.

Author contributions

S. Jones: Conceptualization, Writing – original draft, Writing – review & editing.
S. Tyson: Conceptualization, Writing – review & editing.

Funding statement

The authors received no financial or material support for the research, authorship, and/or publication of this article.

Data sharing

The data that support the findings for this study are available to other researchers from the corresponding author upon reasonable request.