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Introduction

- Surveys are used in 52% of medical research¹
- Common in hand surgery literature
- Validated instruments often used
- Unvalidated questionnaires being used for novel research questions
- Unvalidated questionnaires are subject to increased potential bias
- Researchers and readers may not be aware of these biases
- Careful survey design is essential to obtaining meaningful results²
- Previous studies have characterized questionnaire-based research in other fields^{3,4}, but no similar studies in hand surgery

Methods

Search Strategy

- Pubmed search of articles published 2010-2020
- 4 major American journals containing hand surgery articles:
 - Journal of Hand Surgery (American Volume)
 - HAND
 - Plastic & Reconstructive Surgery
 - Journal of Bone & Joint Surgery (American Volume)
- Keywords related to surveys and questionnaires
 - "survey"
 - "questionnaire"
 - "patient-reported"
 - "poll"
 - "opinion"
 - "question sheet"

Inclusion Criteria	Exclusion Criteria
<ul style="list-style-type: none"> • Published in JHS, HAND, PRS, or JBJS • Published between 2010-2020 • Pertaining to surgery of the hand, wrist, forearm, and/or elbow • Questionnaire used to answer the primary objective of the study or as a primary outcome 	<ul style="list-style-type: none"> • Not published in JHS, HAND, PRS, or JBJS • Not published between 2010-2020 (e.g. Epub ahead of print) • Published in PRS or JBJS and not pertaining to surgery of the hand, wrist, forearm, and/or elbow • Questionnaires administered through semi-structured or open-ended interviews • Questionnaire not used to answer the primary objective of the study or as a primary outcome • Case reports, case series with <5 subjects

Table 1. Inclusion and exclusion criteria.

Results

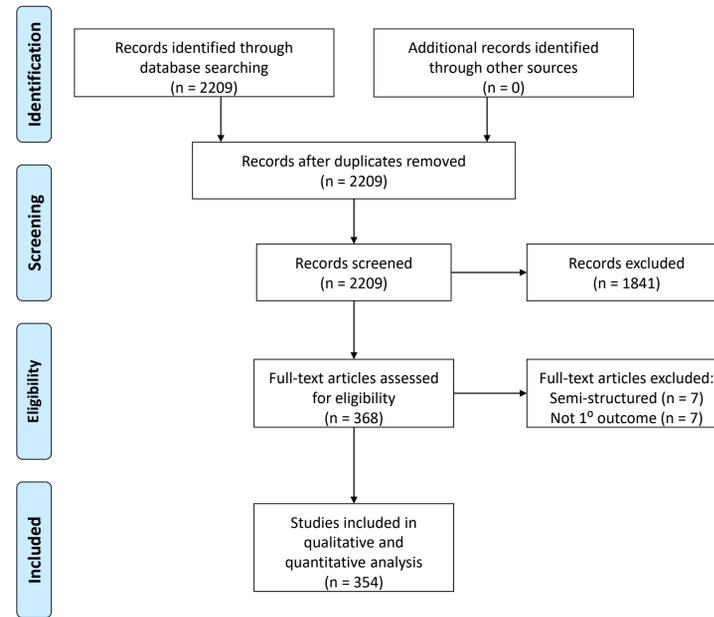


Figure 1. Selection flow diagram.

A total of 354 studies were included according to the selection flow diagram in Figure 1. Of the 354 studies analyzed, 186 (52.5%) used validated instruments, 6 (1.7%) sought to validate an instrument, 64 (18.1%) used a combination of validated and non-validated instruments, and 98 (27.7%) used non-validated instruments. The number of questionnaire-based studies trended upward over the course of the 10-year study period ($r^2 = 0.605$, $P = 0.00481$), but the number of studies using non-validated instruments remained constant ($r^2 = 0.0451$, $P = 0.531$) (Figure 2).

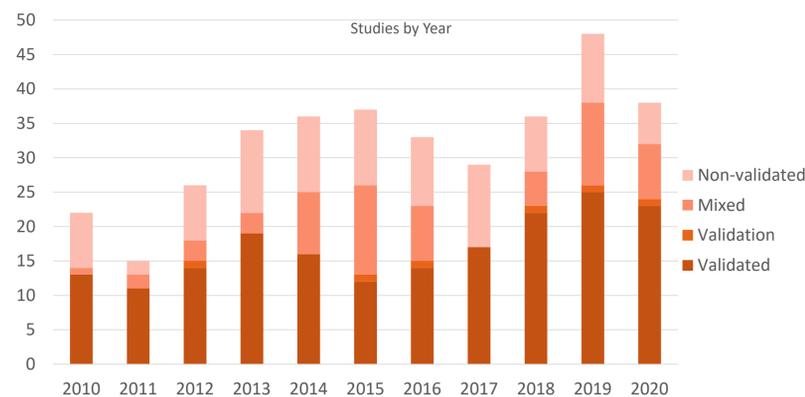


Figure 2. Number of questionnaire-based studies published each year.

When all studies were taken together, the most popular questionnaire topics were PROs (184 studies, 52.0%), other patient-centered topics (101 studies, 28.5%), and physician practice (45 studies, 12.7%). However, topics differed between articles using validated questionnaires and those that used non-validated questionnaires. For articles using validated questionnaires, 158 studies (84.9%) focused on PROs, while 28 (15%) focused on other patient-centered topics. In contrast, articles using non-validated questionnaires preferentially focused on physician practice (44 studies, 44.9%), patient-centered topics (30 studies, 30.6%), and education (13 studies, 13.3%). This comparison is illustrated in Figure 3.

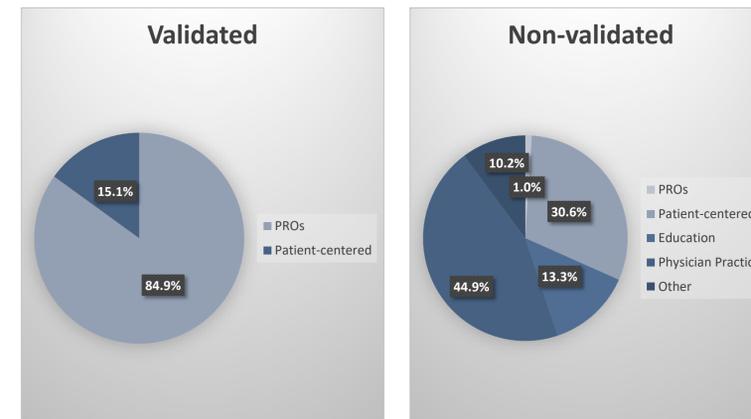


Figure 3. Comparison of topics between articles using validated questionnaires and those using non-validated questionnaires.

Among non-validated questionnaires, 74.5% did not report pre-distribution testing, 49.0% did not publish full survey questions, and 33.3% did not report response rates (Table 2).

	Reported (%)	Not Reported (%)	Partial (%)
Pilot Testing	26 (25.5%)	76 (74.5%)	
Response Rate	68 (66.7%)	34 (33.3%)	
Survey Full Text	52 (51.0%)	38 (37.2%)	12 (11.8%)
Number of Questions	63 (61.8%)	39 (38.2%)	

Table 2. Reporting characteristics for non-validated questionnaires.

Conclusions

- Number of questionnaire studies up-trending over study period
- Non-validated questionnaire studies comprised 27.7% of studies
- Validated studies focused on patient-reported outcomes and other patient-centered topics
- Non-validated studies focused on physician practice, patient-centered topics, and education
- For non-validated questionnaires
 - 73.4% did not have pilot testing
 - 36.3% did not publish actual survey questions
 - 32.7% did not report a response rate
- Not all research questions can be answered exclusively with validated instruments
- Thoughtful questionnaire design, testing and revision helps eliminate bias⁵
- Areas for improvement:
 - Pre-distribution pilot testing to assess for clarity and absence of bias
 - Include survey full text at publication for greater transparency
 - Better reporting on sample selection, respondents, and non-respondents

References

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