

**A Stakeholder Analysis of Patient Reported Outcomes Measures(PROM) in
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On my honor as a University Student, I have neither given nor received
unauthorized aid on this assignment as defined by the Honor Guidelines for
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Introduction

The effectiveness of medical devices is difficult to assess, and various metrics exist to measure it. The healthcare industry and most physicians traditionally assess effectiveness through clinical metrics, yet these measures often fail to capture fewer tangible aspects of patient care, such as quality of life and satisfaction with the device. Patient-Reported Outcome Measures (PROMs) serve as valuable tools to fill this gap in healthcare, offering insights into patients' perspectives on the device. They are robust surveys designed to have high validity and reliability in measuring health outcomes reported by patients across areas such as general health, specific symptoms, and physical, mental, and social health (Patient-Reported Outcome Measures (PROMs) | CIHI, n.d.). Despite their potential benefits, the implementation of PROMs faces significant barriers, largely due to differing stakeholder interpretations of their purpose, utility, and feasibility. Understanding these barriers is crucial, as ineffective PROM implementation can lead to incomplete data, increased administrative burdens, and reduced clinical utility.

Despite the recognized value of PROMs, existing research highlights persistent challenges in their adoption. Patients often report that lengthy and complex surveys discourage completion, while healthcare administrators cite concerns over patient health literacy and survey fatigue (Philpot et al., 2018). Clinicians, on the other hand, identify practical constraints such as time limitations, IT challenges, and a lack of standardized implementation processes (Amini et al., 2021).

The unresolved challenge lies in balancing the needs of different stakeholders while ensuring the effectiveness of PROMs in clinical practice. Without a consensus-driven approach, PROMs risk being underutilized or misapplied, limiting their impact on patient care and

value-based healthcare initiatives. However, given the significant impact PROM implementation could have in the U.S. healthcare system—where patient follow-up remains inadequate and dissatisfaction with treatment outcomes persists (Amat et al., 2022; Roehr, 2007)—it is important to determine what solutions exist to integrate them into routine clinical practice. Addressing these issues is a practical necessity for improving patient-centered care and optimizing healthcare outcomes.

This paper applies to the Social Construction of Technology (SCOT) framework to analyze stakeholder perceptions of PROMs and identify pathways for overcoming implementation barriers. By examining stakeholder-specific concerns, we propose a framework that facilitates PROM adoption in a way that is efficient, feasible, and beneficial for all parties involved. Through this analysis, we contribute to ongoing discussions about the role of PROMs in value-based care and provide actionable recommendations for improving their integration into healthcare systems.

Methods

This study employs a Social Construction of Technology (SCOT) framework analysis, as established by (Bijker et al., 1987), to examine the barriers faced by the implementation of PROMs in healthcare. Specifically, the first stage of SCOT theory, interpretive flexibility, provides the framework to (1) determine the various meanings and interpretations of PROMs among relevant stakeholders and (2) elucidate how to resolve the technological challenges arising from these interpretations that hinder the integration of PROMs in healthcare.

To conduct this analysis, a systematic literature review of inpatient and outpatient settings will be utilized. The literature review will explore current perspectives on PROM implementation among various healthcare stakeholders in both inpatient and outpatient settings.

This will help quantify the most frequently cited challenges and identify practical solutions to address them.

Social Construction of Technology in Healthcare and Device Implementation:

The Social Construction of Technology (SCOT) theory argues that technology is not just an independent force shaping society but is instead shaped by social, cultural, and economic factors. In a medical context, this implies that innovations and devices are not purely driven by scientific discovery but are influenced by what stakeholders, such as patients, healthcare providers, and regulators, need. Thus, for survey tools such as PROMS or devices such as prosthetics or assistive orthotic devices (braces), it is not sufficient for them to simply improve clinical gait metrics or meet engineering feasibility requirements but also to satisfy patient preferences and insurance policies. As a result, the success or failure of a medical device often depends on how well it aligns with the values, needs, and expectations of the people who use and regulate it.

SCOT also highlights the interpretive flexibility of medical devices—different groups may view the same technology in diverse ways. A hospital administrator might see robotic surgical systems as a cost-saving measure, while a surgeon might prioritize their precision, and a patient might be concerned about safety and accessibility. These dynamic influences which technologies gain widespread acceptance and how they evolve over time. In this way, medical devices are not merely neutral tools but are socially constructed artifacts shaped by the people and systems around them.

Ultimately, the widespread implementation of a medical device depends on whether it is beneficial to various stakeholders. If a device aligns with prevailing healthcare priorities—such as cost-effectiveness, ease of use, and demonstrated patient benefit is more likely to gain

regulatory approval, insurance reimbursement, and clinician adoption. For instance, early wearable health monitors faced skepticism due to accuracy concerns, but as societal attitudes toward digital health shifted, they became mainstream (Wall et al., 2023). This illustrates how medical devices are not just adopted based on technical merit but on their ability to satisfy the social, economic, and institutional forces that define modern healthcare.

Literature Review: The Current State and Challenges of PROMs in Healthcare

Patient-Reported Outcome Measures (PROMs) can be considered a type of medical device because they function as tools that systematically capture patient experiences, influencing clinical decision-making and healthcare policies. Just like physical medical devices, PROMs undergo validation and refinement while shaping patient care by guiding treatment adjustments and informing cost-effectiveness analyses.

Currently, Patient-Reported Outcome Measures (PROMs) are used in healthcare settings to systematically capture patient health status, quality of life, and treatment outcomes. These tools are widely integrated into clinical research, especially in areas like orthopedics, oncology, and mental health, where they help track symptoms, recovery progress, and the effectiveness of interventions. Additionally, PROMs are increasingly being incorporated into electronic health records (EHRs) to assess the broader impact of medical treatments and interventions, improving patient-centered care and guiding evidence-based practices. Examples of this include orthopedic care, where measures such as the Oxford Knee Score or Hip Disability and Osteoarthritis Outcome Score (HOOS) help assess pain relief and mobility improvements (Nilsson et al., 2003).

In psychiatric settings, clinicians use the Patient Health Questionnaire-9 (PHQ-9) and Generalized Anxiety Disorder-7 (GAD-7) to quantify symptom severity and guide therapeutic

decisions (Patient Health Questionnaire-9 (PHQ-9) - Mental Health Screening - National HIV Curriculum, n.d.; Sapra et al., n.d.). In a multitude of clinical specialties, PROMs have proven to be extremely effective in allowing clinicians to understand the intangible aspects of patient care with quantitative metrics.

The Challenges of the Inpatient Setting

In inpatient settings, PROMs are commonly used to assess patient well-being before and after surgical procedures, major medical interventions, or acute illness management. For example, in orthopedic surgery, patients undergoing joint replacement may complete the HOOS score before surgery and at various points during recovery to evaluate pain levels, mobility, and overall functional improvement. In intensive care or post-operative recovery, PROMs like the EQ-5D-5L can help track quality-of-life changes and guide rehabilitation strategies (Gray, 2019). Additionally, PROMs are increasingly used in hospital settings to monitor symptoms in real time, allowing healthcare teams to adjust pain management, mental health support, and post-discharge care planning accordingly.

Despite this, PROMs continue to face several hurdles that hinder their widespread use. Heinemann et al. (2022) conducted an institutional study with the goal of identifying the barriers to PROM implementation and implemented a strategy to integrate PROMs with EHRs in a hospital. They noted that accurate and consistent data collection was the most challenging to maintain for multiple reasons.

First, they struggled with the integration of PROMs into existing clinical workflows. Specifically, they discovered that healthcare providers need to be educated on the importance of PROMs, how to accurately interpret them, and how to use them in decision-making processes. Without adequate training, there is resistance from clinicians who may not see immediate

benefits from PROM data, especially in high-stakes, challenging environments like hospitals. Healthcare providers, overloaded with information (Nijor et al., 2022), then fail to consistently implement these surveys, prioritizing established clinical metrics.

Another major challenge determined by Heinemann et al. (2022) for data collection and accuracy, as with all surveys, is patient completion. In a hospital, patients may be too ill, fatigued, or overwhelmed to fill out PROMs consistently or accurately, particularly in critical or post-surgical situations. Given the acute nature of hospital care, patients may be less engaged in filling out PROMs, as they are more focused on immediate concerns like treatment and recovery. This disconnect reduces the effectiveness of PROMs in capturing comprehensive patient-reported outcomes in these settings. The timing of PROM collection is also critical; administering PROMs too early or too late in the patient's recovery can skew results, and determining the right moment for meaningful responses can be difficult.

The Challenges of the Outpatient Setting

In outpatient settings, PROMs help track chronic disease management, rehabilitation progress, and overall patient satisfaction with ongoing treatments. For instance, in oncology clinics, patients undergoing chemotherapy may complete PROMs such as the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30) to assess fatigue, nausea, and emotional distress (CSI, 2017). As mentioned previously, in mental health care, PROMs like the PHQ-9 and the GAD-7 help clinicians monitor treatment responses and make informed decisions about therapy or medication adjustments. Outpatient physical therapy programs also use PROMs, such as the Oswestry Disability Index for back pain, to track patient progress and optimize rehabilitation strategies (Fairbank et al.,

1980). By integrating PROMs into routine outpatient visits, healthcare providers can ensure that treatments align with patient needs and improve overall care delivery.

In these outpatient settings, such as primary care clinics or specialty practices, the use of PROMs faces different but equally significant challenges. One of the key issues is patient adherence, leading to difficulty in interpreting the data. Patients often fill out PROMs without direct supervision, leading to incomplete or inaccurate data, particularly if they do not fully understand the importance of these tools or lack motivation to complete them consistently (Cella et al., 2024). Moreover, patients may not always fully understand how their responses to PROMs relate to their broader treatment plan, which can undermine the utility of the data for guiding care.

This paper found that the implementation of Patient-Reported Outcome Measures (PROMs) continues to face substantial barriers, particularly around clinician engagement, patient adherence, and technological integration. It seeks to underscore the importance of understanding the distinct concerns of each stakeholder group—patients, clinicians, and administrators—to make PROMs a functional part of healthcare delivery. By identifying specific obstacles in both inpatient and outpatient settings, this study highlights the necessity of tailored strategies to improve PROM adoption and utility.

This is compounded by the fact that outpatient visits tend to be shorter, which limits the time available for discussing the results of PROMs or incorporating them into clinical decisions. Outpatient visits are often less frequent, and patients often fail to follow up with their provider, making it difficult to track meaningful changes in PROM scores over time. Without supervised responses from patients and frequent follow-ups, it is harder to determine the trajectory of a

patient's condition or recovery, making it difficult for clinicians to make evidence-based decisions (Brower et al., 2021).

Another challenge is the variability in PROM uses between clinics. Patient transfer is extremely common in a patient's plan of care, but different specialties use different measures, leading to inconsistency across practices. For example, a cardiologist may use one set of PROMs to evaluate a patient's quality of life, while a rheumatologist may use a distinct set, making it difficult to aggregate and analyze data across healthcare settings (Heinemann et al., 2022).

Lastly, clinician buy-in remains a significant issue. Similar to the inpatient setting, many healthcare providers in outpatient care are hesitant to adopt PROMs because of time constraints during patient visits. Some providers do not see PROMs as adding value to their clinical practice, especially when they believe that clinical symptoms and lab results provide sufficient insight into a patient's condition (Cella et al., 2024). Financial constraints further impede adoption.

Outpatient practices, especially small or independent ones, may be reluctant to invest in the technology needed to implement PROMs effectively, as the perceived benefits may not justify the costs. Combined with insufficient technological infrastructure to integrate PROMs into electronic health records (EHRs), there is little incentive for outpatient clinics to adopt them. In some cases, paper-based PROMs are still in use, which makes capturing and analyzing patient-reported data inefficient (Heinemann et al., 2022). Even when digital tools are available, a lack of user-friendly platforms or issues with data transfer between systems can make it difficult for both patients and clinicians to engage with PROMs effectively (Cella et al., 2024).

Discussion: Practical Solutions to Overcome PROM Implementation Barriers

While there are significant challenges in using PROMs in both inpatient and outpatient settings, several practical solutions can help address these issues and enhance their effectiveness.

These solutions focus on incentivizing clinician buy-in, integrating PROMs into clinical workflows, enhancing and standardizing data collection, and maintaining patient engagement.

Clinician Buy-In and Training

Clinicians buy-in is crucial for the successful implementation of PROMs, and overcoming clinician skepticism involves demonstrating their value through education and training. Hospitals and outpatient centers should offer training programs that explain the benefits of PROMs in enhancing patient care and improving quality of life. Clinician training in PROM data interpretation will significantly improve adoption. It is also important to create a culture of collaboration where PROM data is seen as a critical part of the patient's holistic care plan, not just an administrative task. Involving clinicians in selecting relevant PROM measures and developing care protocols that incorporate PROMs can increase their commitment to using the data in daily practice.

Integrating PROMs into Clinical Workflows

If clinician buy-in is supported, the next major barrier to PROM adoption is integrating them into the busy, complex workflows of inpatient and outpatient care. To ensure a smooth transition, funding must be provided for electronic health records (EHR) and patient management systems to integrate PROM data. This would ensure that PROMs are collected and analyzed within existing EHR systems, eliminating the need for redundant entry and reducing clinician time spent charting.

To address these technological challenges, inpatient settings such as hospitals should prioritize upgrading their IT infrastructure to support PROM integration. This includes ensuring that EHR systems are compatible with digital PROM platforms and can manage the data volume efficiently. An example of implementation would be providing patients with tablets to complete

PROMs, which automatically populate their digital records, allowing for a more streamlined process.

For outpatient settings, automation can trigger the distribution of PROMs at scheduled intervals via email, text messages, or patient portals, prompting patients to fill out their measures before or after appointments. Additionally, incorporating decision support tools that flag critical changes in PROM data for the clinical team can help providers act quickly if significant issues arise, allowing for rapid follow-up. For practices with limited resources, cloud-based PROM solutions can provide cost-effective alternatives to expensive hardware. These solutions enable easy access, scalability, and real-time data sharing without requiring significant upfront investment.

Enhancing Data Quality and Standardization

The variability in PROM use between specialties can be addressed by adopting standardized PROM tools across settings. Establishing national or regional guidelines for which PROMs should be used in specific conditions can simplify implementation. For example, using the same PROM tools across different specialties to track overall quality measures (e.g., cancer care or orthopedics) allows for consistent tracking and comparison of outcomes, providing a clearer picture of patient progress over time. This should not come at the cost of condition-specific PROMs but rather involve implementing standardized and common metrics (such as quality of life) to provide a smoother transfer of care between specialties.

Improving Patient Engagement and Adherence

One of the most critical challenges is ensuring that patients consistently complete PROMs and provide accurate, meaningful data. In both inpatient and outpatient settings, patient engagement can be enhanced by simplifying the PROM process. Shorter, more focused PROMs

that are easier to complete can reduce patient burden, especially for those in inpatient care who may be dealing with multiple health issues. As mentioned previously, digital tools and mobile apps can be used to send automated reminders and provide a more convenient platform for patients to complete PROMs at home. These tools can also offer patients feedback on their responses, which may increase their motivation to engage with the process.

For inpatient settings, staff engagement is essential for ensuring that patients understand the value of PROMs. Healthcare professionals should explain the purpose of PROMs, how the information will be used, and how it can improve their care. Additionally, utilizing tablet-based surveys or in-room kiosks can make the process more efficient, allowing patients to complete PROMs quickly during their stay without adding unnecessary burden.

Conclusion

Employing social construction of technology framework to examine PROMs role in healthcare through stakeholder perspectives provides a deeper understanding of why PROMs, despite their clinical and economic value, remain underutilized in everyday care. The SCOT framework clarified how interpretations across stakeholder groups result in technological inefficiencies and resistance, ultimately limiting PROMs' potential in value-based care.

The implications of these findings suggest that promoting PROMs implementation requires cultural, institutional, and policy changes. Solutions such as clinician training, automated survey delivery, and standardized PROM selection must be supported by strategic investment and policy alignment. In particular, integrating PROMs into electronic health records and clinical workflows could enhance data fidelity, reduce provider burden, and improve patient-centered care across specialties.

This paper is limited by its reliance on literature-based analysis and secondary data limits the direct generalizability of its findings. Future research incorporating primary stakeholder interviews or real-world pilot programs with quantitative results would strengthen the conclusions drawn and help validate the proposed interventions.

Ultimately, this paper was driven by the need to improve how we measure what matters most: the patient's voice. PROMs, when properly implemented, offer a pathway toward more responsive, equitable, and effective healthcare. Ensuring their widespread adoption is not merely a technical fix but a structural necessity in the US healthcare system that claims to be patient-centered.

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