Measuring surgical patient engagement: A scoping review

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Abstract

Background

Patient engagement is a patient's capacity and willingness to participate and collaborate in their own health care. This scoping review aimed to identify tools used to measure engagement among surgical patients, the levels of engagement and the association between engagement and surgical outcomes. We hypothesise that highly engaged patients are more likely to achieve better surgical outcomes.

Review methods

MEDLINE/PubMed, CINAHL, SCOPUS and Embase were searched for studies that assessed adult perioperative patients for engagement. Analysis from charting the data identified the measurement tools, levels of capacity to engage and relationships between engagement and surgical outcomes.

Results

Twelve studies were selected out of 3975 identified; three valid and reliable tools to measure surgical patient engagement – Patient activation measure (PAM®), Patient health engagement scale (PHE-s) and Hopkins rehabilitation engagement rating scale (HRERS) – were identified, as well as levels of engagement. The capacity to engage was categorised into two, three or four levels. High levels of engagement were associated with enhanced patient satisfaction, better adherence to physical therapy, and decreased pain and disability.

Conclusion

There are valid and reliable tools to measure the capacity of surgical patients to engage in their post-operative recovery; PAM® is the most frequently used tool. Patients with higher engagement are more likely to report better physical health and greater satisfaction with their surgery. Using these tools could assist health care providers in the early identification of patients at risk of poor recovery and provide tailored support.

Keywords: patient engagement, levels of engagement, patient activation measure, surgery, scoping review

Background

Surgery is a major component of the health care system with 2.7 million[1] surgeries performed annually in Australia. While a patient's surgery may be successful, the success of their recovery is not guaranteed. In Australia and New Zealand, 30 complications occur in every 100 patients.[2] Encouraging patients to engage in perioperative care education shapes effective collaboration between patient and provider, prevents complications and promotes patient recovery.[3] Also, importantly, those who experience fewer post-operative complications are more likely to express higher satisfaction.[4]

In the current health care system, patients are motivated to participate[5] and hospitals are adopting patient-centred approaches to promote patient engagement[6]; however, patients feel there is limited opportunity to do so due to the power imbalance between health care providers and themselves.[5,6] Studies have shown that behaviours of health care providers, including nursing staff, such as ignoring patient knowledge[6,7] and providing insufficient information,[7–9] prevents patient participation[6] and leads patients to adopt a passive role in their care.[7–9] As such, there is a recognised urgency to empower patients to engage in their health care. Despite this, when encouraging patients to participate in their health care, health care providers often disregard a patient's ability to engage[6] and often presume the level of a patient's understanding of their surgical journey.[7] This frequently results in a 'one size fits all' approach to educating patients.

Tailored education is important to promote patient engagement, as it provides patients with the appropriate knowledge and skills to take ownership of their health and make informed decisions. It also promotes effective communication between patient and provider. It is therefore essential for health care providers to understand their patients' levels of engagement so they can provide effective, tailored support[8] to minimise the impact of post-surgical complications on patients' physical and mental health.[9]

Patient engagement

Patient engagement consists of behaviours that are shaped by degree of participation, according to patients' desires and capabilities, and influenced by partnership with providers and institutions.

Patient engagement involves four developmental phases:

1. blackout – disengaged and overwhelmed

2. arousal – gaining awareness but lacking knowledge

3. adhesion – taking action

4. eudaimonic – accepts the 'patient identity' and integrates and maintains health care behaviours.[10]

Patient engagement shifts the patient role from a passive participant in the health care system to an active member of the health team. Engaged patients are able to access and process information, participate in decision-making and act in their health care. They are more likely to manage their condition by adhering to treatment plans, take preventative health measures and ask questions when confused. These behaviours are important because they can facilitate patient recovery. Compared to less engaged patients, more engaged surgical patients report better post-operative surgical results, reduced pain and greater adherence to physical therapy (PT).[11–13]

Current interventions (e.g. health behaviour change counselling,[14] decision aids and health information technology[15,16]) have been designed to include patients in their ecosystem of care; however, before interventions can be implemented it is essential to first understand a patient's capacity to engage. This knowledge is vital to identifying barriers to patient engagement and determining areas where patients need more support.

We conducted a scoping review which aimed to provide an overview of current patient engagement measures, the levels of engagement measured among surgical patients

and the associations between engagement levels and surgical outcomes. Our findings will assist health care professionals involved in caring for surgical patients to choose the appropriate tools to understand their patients' capacity to engage.

Methods and analysis

Protocol design

A scoping review is appropriate as we aimed to explore the available tools to measure patient engagement and identify key characteristics of and factors that influence surgical patient engagement.[17] This scoping review was written in accordance with the framework proposed by Arksey and O'Malley[18] which has been further enhanced by Levac et al.[19] and The Joanna Briggs Institute (JBI).[20] This framework organises the review process into a minimum of five stages:

1. identifying the research questions

2. identifying relevant studies

3. selecting studies

4. charting the data

5. collating, summarising and reporting the results.

Stage 1: Identifying the research questions

The following research questions were identified based on an initial exploratory study of the literature on patient engagement in surgery and discussions with members of the research team:

1. What are the tools used to measure levels of engagement among surgical patients?

2. What are the levels of engagement measured among surgical patients?

3. Are levels of engagement associated with surgical outcomes?

The following assumptions were made to further clarify the definitions of common terms used when formulating research questions:

1. 'patient engagement' involves increasing or promoting patient knowledge, skills, ability and willingness to manage their own health and care, or meaningful and active patient–provider collaboration (i.e. shared decision-making and asking questions related to their care)

2. 'surgical patients' are individuals in their perioperative phase (from the time the patient goes into surgery until the time the patient goes home

3. 'surgical outcomes' include results of surgery, pain levels, rate of hospital readmission and adherence to PT sessions.

Stage 2: Identifying the relevant studies

The four selected databases were MEDLINE/PubMed, CINAHL, SCOPUS and Embase. An initial search was conducted using key concepts within our research questions: 'patient engagement', 'surgery', 'outcomes', 'measure' and 'levels of engagement'. To elicit more relevant articles, search terms were reviewed to include: 'consumer', 'client', 'perioperative care', 'questionnaire', 'scale' and 'survey'. Producing irrelevant search results, 'consumer' was excluded. Upon discussion with the research team, the search terms were finalised as follows: AB (measure OR questionnaire OR survey OR scale) AND AB (surgery OR surgical patients OR perioperative care) AND AB (patients OR perioperative care) AND AB (patient

engagement OR patient activation OR patient participation OR patient experience OR patient involvement). See supplement 1 for an example search history.

Stage 3: Selecting studies

Search results were combined, with duplicates removed. Articles were screened for their title, abstract and index terms, to ensure all eligibility criteria were met, and categorised into the following groups: 'exclude', 'include' and 'maybe'. The full text of the articles in the 'maybe' and 'include' groups were screened then checked by another researcher to ensure consistent application of the eligibility criteria. 'Maybe' group articles were found to explore aspects of patient engagement (e.g. decision-marking, health literacy and empowerment), but not patient engagement in its totality. As such, these papers were excluded.

The inclusion criteria were subjects being adults ≥ 18 years old, subjects being surgical patients during the perioperative period, the study assessed patient engagement and the report was published in English. Being a scoping review, all publication types were included (i.e. guidelines, theses, etc.). Qualitative studies and studies not assessing levels or measures of engagement were excluded and no timeframe was included due to the potential of limited search results.

Stage 4: Charting the data

In scoping reviews, data extraction is referred to as charting the results. Data was entered in an Excel spreadsheet and collected on the following information: year of publication, author, country of origin, title, aim, study type, selection criteria, study population and sample size, type of patient engagement measure used, levels of

engagement measured, results and conclusion.

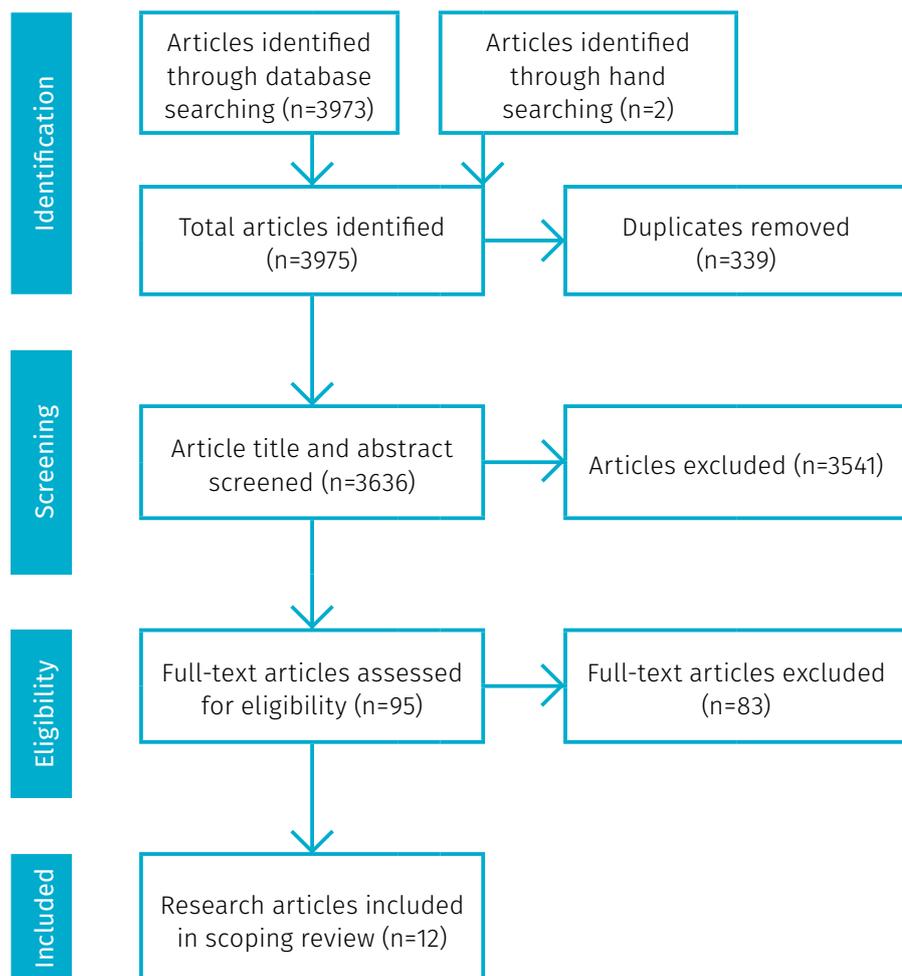## Stage 5: Collating, summarising, and reporting the results

Analysis of the data provided information about the levels of engagement among surgical patients and the associated surgical outcomes. This identified the actions and behaviours of surgical patients associated with each level, highlighting the potential surgical outcome benefits and the impact of enhanced patient engagement. Furthermore, it determined gaps in the literature and under-researched areas that require further investigation. Findings are presented in tables and charts where appropriate.

Results

The literature search yielded a total of 3973 articles with two articles identified through hand searching. 339 duplicates were removed. After the initial screening of article titles and abstracts, 95 full-text papers were screened, of which 12 were included in the final review. The detailed process of articles identified, screened, excluded, selected and reviewed is depicted in Figure 1.

Characteristics of the selected articles

Articles were primarily published as of 2011 and from the United States of America (USA). Over one third were longitudinal studies and spine surgical populations were primarily assessed (8 of 12 articles). Table 1 provides a summary of the studies and supplement 2 is the complete data extraction of the study characteristics.

```
┌──────────────┐   ┌────────────────────┐   ┌────────────────────┐
│ Identification│   │ Articles identified │   │ Articles identified │
│              │   │ through database    │   │ through hand        │
│              │   │ searching (n=3973)  │   │ searching (n=2)     │
└──────────────┘   └────────────────────┘   └────────────────────┘
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Figure 1: Study selection process

Boxes: Total articles identified (n=3975) → Duplicates removed (n=339); Article title and abstract screened (n=3636) → Articles excluded (n=3541); Full-text articles assessed for eligibility (n=95) → Full-text articles excluded (n=83); Research articles included in scoping review (n=12). Left labels: Identification, Screening, Eligibility, Included.

Measures of patient engagement

Three tools were identified: Patient activation measure (PAM®), Patient health engagement scale (PHE-s) and Hopkins rehabilitation engagement rating scale (HRERS). All tools are validated and reliable measures of patient engagement, designed to be short and feasible for a wide audience with different comprehension skills. PAM® was the most commonly used scale (10 of 12 articles) and is available in over 35 validated translations.[21]

Table 2 compares features of the patient engagement measures.

The self-reported PAM® and PHE-s are used across a variety of health conditions and disease prevention efforts. PAM® captures the six dimensions of patient activation in 10 or 13 items to assess patient willingness, knowledge, skill and confidence to manage their health care. PHE-s is a five-item psychometric questionnaire that describes patient's experience along a continuum of the four phases of engagement.[10] In contrast, the five-item clinician-rated HRERS specifically quantifies patient rehabilitation engagement through behavioural observations.[14] Unlike PAM® and PHE-s, HRERS cannot

capture engagement throughout the entire perioperative process.

PAM® uses a five-point Likert scale where patients rate their level of agreement with each item to produce an activation score between 0 and 100. PHE-s uses a seven-point Likert scale, allowing patients to rate themselves between engagement positions to facilitate more accurate responses. PHE-s scores are calculated as the median of item scores, ranging from 1 to 4, which corresponds to an engagement phase. HRERS uses a five-point scale, ranging from 'never' to 'always'. Scores are calculated by summing ratings minus the score of item 2, to produce an overall score ranging from 5 to 30. For all measures, the higher the score, the greater the engagement.

Levels of patient engagement

Patient engagement is a developmental process that involves levels or phases. In the literature, engagement was categorised into two to four levels – two levels (low and high),[12–14,26–28] three levels,[29] four levels[10,30–34] – with two and four being the most common. While PAM® and PHE-s identify four levels of engagement, PAM® determines the levels based on patient perception of participation in their care process – passive and overwhelmed (score ≤ 47.0), lack of knowledge and confidence (score 47.1–55.1), taking action but lacking confidence and skills (score 55.2–67.0) and adopting new behaviours but unable to maintain them under stress (score ≥ 67.1).[31,32–34] PHE-s describes them according to the emotional and psychodynamic components throughout the engagement experience – blackout = 1, arousal = 2, adhesion = 3 and eudaimonic = 4.[10]

Table 1: Summary of studies included in this scoping review assessing patient engagement among surgical patients

		Number of articles (n= 12)	Percentage of articles
Year of publication	2006–2010	1	8%
	2011–2015	5	42%
	2016–2020	6	50%
Country	USA	11	92%
	Italy	1	8%
Type of article	conference abstract	1	8%
	longitudinal study	4	33%
	clinical trial	2	17%
	observational study	1	8%
	prospective cohort study	1	8%
	qualitative study	1	8%
	retrospective study	1	8%
	review	1	8%
Surgical population studied	adult spinal deformity (ASD) surgery	1	8%
	lumbar and cervical spine disorders	6	50%
	spine surgery and spinal cord stimulation	1	8%
	hand and upper extremity surgery	1	8%
	primary hip or knee arthroplasty (THA/TKA)	1	8%
	thoracic surgery	1	8%
	thyroidectomy, colectomy or proctectomy	1	8%
Patient engagement measure used	PAM®-10	2	17%
	PAM®-13	8	67%
	PHE-s	1	8%
	HRERS	1	8%
Number of levels of engagement measured	2	6	50%
	3	1	8%
	4	5	42%

THA = total hip arthroplasty, TKA = total knee arthroplasty, PAM®-10 = 10-item Patient activation measure, PAM®-13 = 13-item Patient activation measure, PHE-s = Patient health engagement scale, HRERS = Hopkins rehabilitation engagement rating scale

Table 2: Comparison of patient engagement measures

	Patient activation measure (PAM®)	Patient health engagement scale (PHE-s)	Hopkins rehabilitation engagement rating scale (HRERS)
Person who rates	patient	patient	clinician
Purpose and dimensions	To assess patient activation: • self-management of symptoms • engagement in treatment plan • shared decision-making • collaboration with health care providers • informed choices of provider based on quality • navigating the health care system.	To assess patient engagement: • blackout – disengaged and overwhelmed • arousal – gaining awareness but lacking knowledge • adhesion – taking action • eudaimonic – accepts the 'patient identity' and integrates and maintains health care behaviours.[10]	Assess patient engagement during rehabilitation: • therapy attendance • attitude toward therapy • need for verbal or physical prompts to facilitate initiation or maintenance of therapy engagement • recognition of the need for therapy • level of active participation in the therapy.
Number of questions	10 or 13	5	5
Time to complete*	<10 minutes	<5 minutes	<5 minutes
Number of languages available in	51	5 (Chinese, English, Italian, Spanish and Turkish)	1 (English)
Score range	0–100	1–4	5–30
Levels of engagement**	1. passive and overwhelmed 2. lack of knowledge and confidence 3. taking action but lacking confidence and skills 4. adopting new behaviours but unable to maintain them under stress	1. blackout 2. arousal 3. adhesion 4. eudaimonic	1. low 2. high
Reliability and validity	Internal consistency (Cronbach = 0.81).[22] Validity: higher proportion of participants with low activation in unplanned admission group for both oncology and cardiology service lines ($p = 0.007$, and $p = 0.047$, respectively).[22]	Internal consistency (ordinal alpha via empirical copula= 0.85).[23] Reliability (PSI= 0.884).[23] Correlations between PHE-s and PAM® ($r = 0.431$, $p < 0.001$).[23] Test-rest reliability (ICC = 0.95; CI = 0.90–0.97).[23]	Internal consistency (Cronbach =.91).[24] Interrater reliability (intraclass correlation coefficient, 0.73).[24]
Responsiveness and sensitivity	For every +1 PAM® score, hospitalisation decreases, and medication adherence increases by 2% each.[25]	–	–

*This has been estimated by the author as there were no details found.

**Of the ten studies that used PAM®, five articles reported only two levels of engagement – low or high; one article, three levels – low, medium or high; four articles reported the four levels listed.

Correlations with patient engagement

Eleven articles examined correlations between factors influencing patient engagement and/or behaviour and health outcomes (see Table 3 and Figure 2). See supplement 3 for the complete data extraction of study aims and results.

Influencing factors

Two articles identified a correlation between patient engagement and patient characteristics. Among spine surgery patients, non-white individuals were more likely to score lower PAM® scores (P= 0.042) and individuals with higher household income were more likely to be in the upper quartiles of patient activation (P= 0.048)(13). Higher PAM® scores of patients with hand and upper extremity conditions were correlated with higher education (r= -0.055, P < 0.1), both assessed prior to surgery.[28]
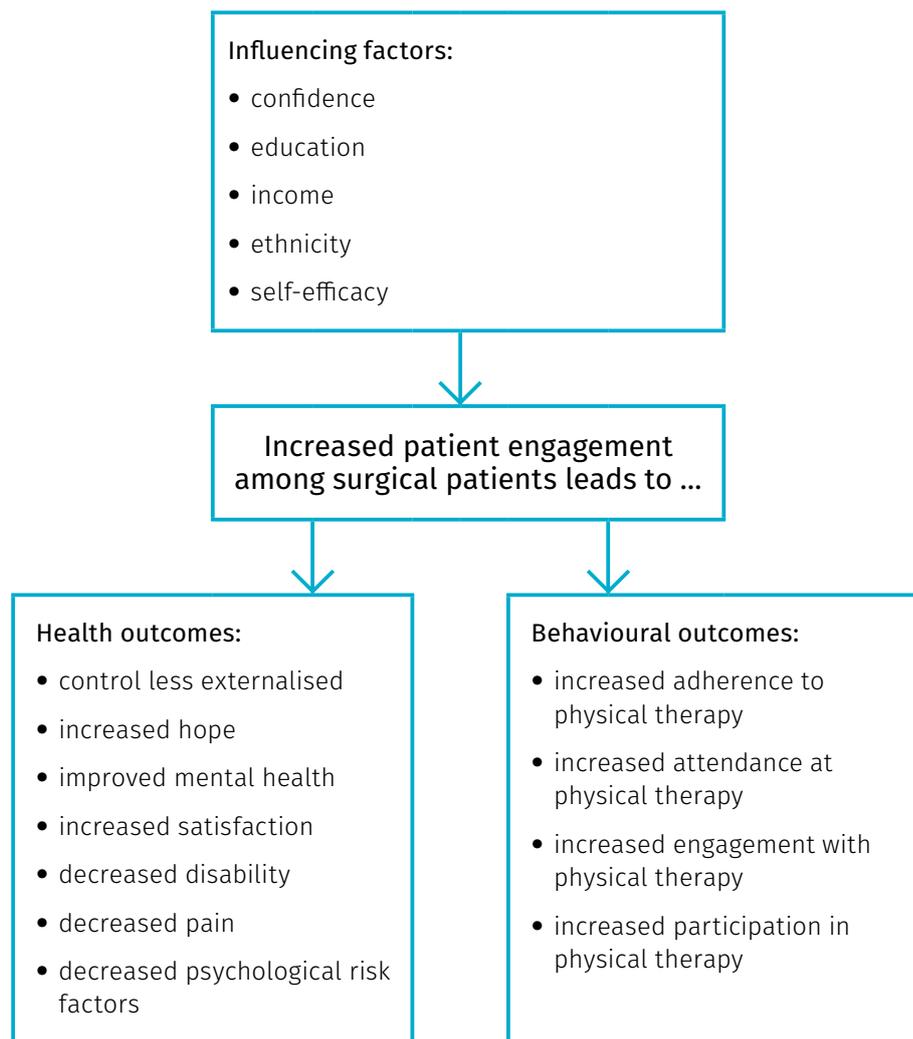
Outcomes

Fourteen health and behaviour outcomes were identified. The outcome most commonly correlated with patient engagement was satisfaction. Four articles reported that patients with higher PAM® scores were more likely to be

satisfied[12,26,28,32] and a study of spine surgery patients found that highly activated patients were three times more likely to be satisfied with their treatment at one year post-surgery (OR 3.23, 95% CI 1.8–5.8).[32] Similarly, another study found that satisfaction was more likely for patients in PAM® levels 3 and 4 at one year post-surgery than at three or six months post-surgery (p< 0.05).[34] This suggests that the engagement is important for longer-term post-operative recovery.

Several psychological correlations were identified. Patients with higher engagement were more likely to report high self-efficacy.[13,28,31] Among spine surgery patients undergoing PT, increased engagement was significantly associated with increased self-efficacy (P< 0.001), increased hopefulness (P= 0.003), increased confidence to participate in PT (79% vs 53%), decreased depressive symptoms (P< 0.001) and decreased externalised control (powerful others, P<0.001; physicians, P=0.003; other people, P=0.002).[13] One study found that for every one-point increase in PAM® score, mental health scores improved by 0.26.[12] Furthermore, patients with higher PAM® scores did not show the same psychological risk factors (i.e. demoralisation, negative emotions and self-doubt) compared to patients with lower scores.[26] This suggests increased engagement protects against psychological risk factors that impact surgical outcomes.

Higher engagement was correlated with decreased disability[14,28,30] and pain intensity.[12,28,30] On average, pain intensity decreased by 3.15 ± 1.91 points for level 4 patients compared to 2.01 ± 2.24 points for level 1 (p = 0.029).[30] Among anterior cervical discectomy and fusion patients there was no difference in immediate

Figure 2: Correlations with patient engagement

Influencing factors:

• confidence

• education

• income

• ethnicity

• self-efficacy

Increased patient engagement among surgical patients leads to …

Health outcomes:

• control less externalised

• increased hope

• improved mental health

• increased satisfaction

• decreased disability

• decreased pain

• decreased psychological risk factors

Behavioural outcomes:

• increased adherence to physical therapy

• increased attendance at physical therapy

• increased engagement with physical therapy

• increased participation in physical therapy

post-operative pain and narcotic consumption between PAM® levels.[29] As such, pre-operative PAM® scores may not predict post-operative outcomes for all surgery types.

Three articles investigated correlation between patient engagement and PT.[13,14,27] Increased PAM® scores were associated with improved adherence to PT, and positively correlated with participation in PT (r = 0.53, P<0.001) and engagement with PT (r = 0.75).[13] Patients who participated in health behaviour change counselling (patient engagement intervention) had significantly higher rehabilitation engagement than the control

group (who did not receive health behaviour change counselling) (21.20±4.56 vs 23.57±2.71)[14]; however, one-third still reported low rehabilitation engagement compared to the control group.[27] This highlights the need to address barriers that inhibit greater improvements in rehabilitation engagement.

Discussion

This scoping review identifies valid and reliable measurement tools that are easy to use and can provide perioperative nurses and other health care professionals with information about the level of patient engagement. Knowing this

Table 3: Correlations with patient engagement

Author (year)	Patient engagement — Measure used	No. of levels identified	Health outcomes — Depressive symptoms	Disability	Control less externalised	Hope	Mental health	Narcotic consumption	Pain	Physical health	Psychosocial risk factors	Satisfaction	Behavioural outcomes — Adherence to PT	Attendance at PT	Engagement with PT	Participation in PT	Influencing factors — Confidence	Education	Ethnicity	Income	Self-efficacy
Skolasky (2008)[13]	PAM®-13	2	-		+	+							+	+	+	+	+		•	+	+
Skolasky (2011)[30]	PAM®-13	4		-			X		-	+											
Gruber (2014)[28]	PAM®-13	2		-					-			+			+			+			+
Andrawis (2015)[12]	PAM®-13	2		-			+		-			+									
Skolasky (2015, Pt 1)[14]	HRERS	2											+	+	+						
Skolasky (2015, Pt 2)[27]	PAM®-13	2													+						
Block (2019)[26]	PAM®-13	2									-										
Harris (2019)[34]	PAM®-13	4										+									
Patel (2019)[29]	PAM®-10	3						X	X												
Harris (2020)[32]	PAM®-13	4										+									
Yun (2020)[31]	PAM®-10	4																			+

Key: PT= physical therapy, + = positive correlation, - = negative correlation, • = correlation, x = no correlation.

can help health care practitioners improve patient-centred care and promote positive clinical outcomes.

The three tools identified are user-friendly and may be used as diagnostic tools to assess a patient's capacity to be an active participant in their care. PAM® is the most widely used measure. It captures a wide range of contributors to engagement, to provide a more comprehensive assessment of patient engagement, and caters to patients from culturally diverse backgrounds, having been translated into over 35 languages.

Patients with higher levels of engagement were more likely to report greater satisfaction, better adherence to and engagement with PT, and decreased pain and disability.

Comparison with existing literature

Consistent with studies on non-surgical populations, patient engagement was associated with psychological factors (i.e. self-efficacy, hope, locus of control, confidence and satisfaction)[13] and psychological risk factors (i.e. demoralisation, negative emotions and self-doubt).[26] Increased self-efficacy and confidence was associated with increased engagement. Patients with a high level of engagement were more likely to report more internalised control, hope, satisfaction and improved mental health, reflecting that psychological factors may affect a patient's willingness, confidence and ability to engage. Furthermore, those factors identified pre-operatively have been reported to effect post-operative physiological and psychological outcomes.[35,36]

As health care systems transition from disease-centred to patient-centred care, the need to assess

a patient's capacity to engage is paramount, as it will not only capture patients at risk of low engagement pre-operatively, but also enable health care providers to gain an insight into psychological morbidity of their patients and identify patients who might have potentially poor surgical outcomes. These findings will provide an opportunity for health care providers or health care organisations to deliver individualised interventions to better support patients and prevent poor surgical outcomes.

This review identified some contradictory findings about correlation between patient engagement and mental health or pain, with one study identifying no association,[29] while others did.[12,28] One study[30] found an association between patient engagement and pain but not mental health. These conflicting findings may be a result of different sample sizes (no association, N = 65[30] vs association, N = 125[12]) and surgery types (lumbar spine surgery[30] vs total hip and knee arthroplasty[12]).

Interpretation of the findings

Patient engagement and the surgical journey are both processes which involve phases. Depending on surgery type, the surgical journey has an acute phase and a long-term recovery phase for those that require rehabilitation. Through this process, a patient's capability to engage will change over time. Reported satisfaction increased with higher levels of pre-operative engagement one-year after surgery, but not at three or six months post-operatively.[34] This suggests that patients with high capacity to engage are more likely to have better engagement further into their health care journey. This continuous and sustained effort to engage will in turn have long-term effects.

However, it is unclear whether the level of patient engagement measured here during the long-term recovery phase reflects the immediate post-operative journey. One third of the reviewed studies were longitudinal but only one assessed patient engagement before and after surgery, finding that satisfaction increased with higher levels of pre-operative engagement one year after surgery.[34] Due to this gap in the literature, it is unknown how surgical patient engagement evolves.

Existing research focuses on the patient characteristics that influence patient engagement, and the outcomes associated with it, but not on the 'why' behind non-engaged patients or the 'what' that hinders their ability to engage. One study, in which health behaviour change counselling was administered to improve patient activation, reiterated the importance of these findings; however, one third of patients still reported low rehabilitation engagement due to a lack of knowledge and support, resulting in low self-efficacy which health behaviour change counselling was not designed to address.[27] While measurement tools do not tell us why patients do not engage, they may be used to identify barriers which may reflect why patients cannot engage. Early identification of these barriers allows health care provider intervention, creating an opportunity to minimise these barriers to engagement.

Considerations for clinical practice and future research

Patient engagement is important to patient-centred care. PAM® stood out as the preferred evaluation tool due to its ease of use, wide application and ability to provide quantifiable measures to determine

the level of engagement as well as capture a wide range of components involved in engagement. PAM®'s broad and inclusive nature allows it to be used across different disease groups, cultural backgrounds and stages of the health care journey. In order to integrate PAM® into the clinical setting, it is important to consider the facilitators and barriers to its implementation.

Facilitators

The implementation of PAM® requires organisational, leadership and provider support for patient engagement. Organisational leaders recognise the importance of patient activation and communicate this to staff.[37] Similarly, health care providers perceived PAM® as a valuable and acceptable tool to demonstrate the efficacy of the person-centred approaches they use.[38] At the patient level, patients found PAM® easy to complete as it only takes five minutes to fill out. On average, 90 per cent of respondents provide reliable PAM® responses.[39]

Previous studies showed that organisations and health care providers who have used PAM® found PAM® aligns well with person-centred care.[38] PAM® appealed as a way of quantifying qualitative constructs[38]; in addition, when using a more flexible administrative approach (e.g. mediate completion, deviate and elaborate on questions to assist patient understanding), PAM® opened discussion on patient engagement and re-aligned patient–provider understanding to improve patient-centred care.

Barriers

To successfully implement PAM®, organisational resources are required. It is important to provide appropriate training, infrastructure and personnel to support staff and patients. In addition, organisations should consider the time and funds needed to train staff and fully adopt PAM®. To support staff, organisations may consider redesigning workflow and revising staff roles. Other qualified members, such as front desk staff, can administer PAM® and take greater responsibility for patient engagement and care[40]. Re-allocating work that does not require medical or nursing skills will relieve extra workload and allow more efficient workflow. This is particularly important in smaller organisations or individual practices (e.g. family practices) to overcome staffing challenges that can affect implementation.[40]

At the health care provider level, a well-defined but flexible and time efficient administration process to appropriately inform patient care is important for PAM® implementation.[41] It is important to note that when a patient needs assistance to complete PAM® longer than the five minutes indicated by developers may be needed to establish common understanding and goals.

Future research

Future research should explore patient engagement among surgical patients beyond those undergoing orthopaedic surgery. In addition, it is necessary to investigate how patient engagement develops during the perioperative process and identify why patients are not engaged.

Limitations

As health care systems transition from disease-centred to patient-centred care, the term 'patient engagement' has become increasingly popular. Throughout the rise of the term, patient engagement has assumed many definitions; however, there is no widely accepted definition or criteria for patient engagement. Various terms for patient engagement were included in the search; however, broader search terms (e.g. 'education', 'coaching', 'literacy' and 'teaching') were not included. Adding these terms would have broadened the search but might have retrieved many irrelevant papers. As such, search terms and findings from this review are based on our chosen definition of patient engagement.

The studies included in this scoping review were primarily conducted in the USA, where health care delivery differs from other parts of the world. Therefore, these findings may not apply to surgery patients elsewhere. Furthermore, the number of studies produced is limited, and most articles are about orthopaedic surgery patients. As such, the results of this scoping review may not be applicable to other surgical populations or align with the results of studies conducted in other populations.

Conclusion

There are valid and reliable tools to measure the level of engagement among surgical patients, and engagement levels correlate with some health and behavioural outcomes. Consistent with patient-centred care, these tools can be used to help early identification of patients at risk of poor recovery and to provide personalised perioperative support. Future research should be extended to non-orthopaedic surgery patients and explore the evolution of patient engagement throughout the surgical journey.

Competing interests and funding declaration

Acknowledgments

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