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Inpatient Satisfaction on Non-Pharmacological Interventions for Acute Settings: A Systematic Review

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Background: Many patients experience stress and dissatisfaction when they are admitted to acute settings, where they receive short-term and active care for severe injuries, illnesses, or surgeries. Patient satisfaction is a key indicator of healthcare quality that affects patient outcomes, service delivery, and safety.

Objective: This review aimed at systematically mapping and summarizing the evidence on non-pharmacological interventions that targeted patient satisfaction in inpatient acute settings.

Methods: Three electronic databases were searched, including PubMed, EBSCO, and ScienceDirect. The inclusion criteria were: (1) studies of non-pharmacological interventions to improve patients' satisfaction and targeting inpatients between the ages of 19 and 65 years old; (2) studies written in English and published in the last 10 years, starting from 2017. The search results were imported and screened for eligibility on Covidence. The data was then extracted, using a tool entered in Covidence's Extraction 2.0. The extraction tool included domains on both intervention impact and delivery processes.

Results: A total of 11 articles met the inclusion criteria. Randomized control trials represented the most among the group; seven studies were included given that the others were quasi-experimental studies. Those studies were conducted on the different types of services offered in acute care departments. These studies did not use a standardized questionnaire to evaluate their respective trial outcomes or to implement various adapted or adopted modules of intervention. Of note, the intervention was effective in enhancing patient satisfaction in only some of the studies.

Conclusion: Different types of intervention modules have been effective in improving acute care patient satisfaction. However, further studies are needed to evaluate the effectiveness of an intervention among all patients in different acute care departments at the same time.

Keywords: inpatient satisfaction, nonpharmacological interventions, systematic review, acute care, acute settings

Introduction

In recent decades, healthcare provision has gone a transformative shift from the focus on condition treatment to a complex multi-component service provision that promotes patient outcomes, efficiency, and cost-effectiveness. As a result, healthcare decision makers need to examine the impact and efficiency of the delivered healthcare services, starting with quality assurance.[1,2] Patient satisfaction is one of the common indicators of healthcare quality, with a known impact on clinical outcomes, service delivery, and patient safety.[2] It is a constant concern for healthcare organizations and researchers across the world.[3]

When measuring patient satisfaction, the patient's point of view is the key issue, as is their total experience with healthcare services.[4] Many instruments have been developed and used to measure patient satisfaction. Ng and Luk 2019,[1] have observed that medical, nursing, physiotherapy, and occupational therapy healthcare disciplines share universal

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patient satisfaction attributes in their concept analysis of patient satisfaction. Among these attributes are the provider's attitude, technical competence, accessibility, and efficacy. However, most of the developed instruments included researcher-defined parameters to assess patient satisfaction.[5]

Acute settings are facilities that provide active care within a short period of time rather than chronic care over a long period. Acute care typically treats a severe injury, an acute episode of illness, or occurs during surgery recovery.[6] For many patients, being admitted into an acute care institution can be a stressful and dissatisfying experience, highlighting the need to monitor their satisfaction and provide interventions for improving it.

Healthcare organizations and professionals have been striving to be more proactive in improving patient satisfaction through targeted interventional approaches.[7] Several interventions have been implemented with the aim of improving patient satisfaction. Interventions can be centered on the patient, provider, organization, or multifaceted. Interventions targeting patient satisfaction could also be pharmacological or non-pharmacological. Non-pharmacological interventions are evidence-based noninvasive services, products, or programs each serving various patients satisfaction needs.[8] Little is understood about the effectiveness of such interventions on patient satisfaction in acute care settings specifically.

Therefore, this review aimed at systematically map and summarize the evidence of non-pharmacological interventions that were targeted at promoting patient satisfaction in inpatient acute settings. Several concepts were pre-defined for the review, including adult inpatients acute settings with a length of stay of three days or more. The review also focused only on non-pharmacological interventions.

Review Question

What non-pharmacological interventions have been used in acute settings to improve inpatient satisfaction?

Methods

Study Design

Systematic reviews have been recognized as an important research technique, as they offer a comprehensive overview and summary of the latest available evidence on a given topic.[9] The current systematic review provides data that can be used to improve future patient satisfaction interventions. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed when conducting this systematic literature review. The PRISMA flow diagram for systematic review was followed, which includes the following phases: identification, screening, and inclusion (Figure 1).

Identification Phase

Search Strategy

Electronic searches of Pub-Med, EBSCO, and ScienceDirect were conducted by one author (NA) on December 12, 2022. The search terms were constructed by utilizing an adapted version of the PICO framework. PICO is an acronym that stands for population, intervention, control or comparator, and outcome.[10] The current review's search terms were aligned with PICO as follows: Adults aged 19–65 and in-patients make up the *population*. *Intervention*: non-pharmacological interventions used in acute settings that impact patient satisfaction. Given that the aim of this review was to identify and map interventions that affect patient satisfaction, the *control/comparator*, and *outcome* elements were not limited to key terms. The search contained linked indexed and free text phrases, using Boolean operators.

Key Terms

The Pub-Med search term syntaxes were inpatient AND patient satisfaction AND intervention. An advanced search was used to filter the studies to include those published in English between 2016 and 2022 on adults, aged 19 or older. The total number of studies included from PubMed search totals 135. The EBSCO search term syntax was inpatient OR hospitalization OR hospitalized patients AND patient satisfaction; it yielded128 studies. The ScienceDirect search term syntax were inpatient AND patient satisfaction AND intervention, which yielded 337 studies.

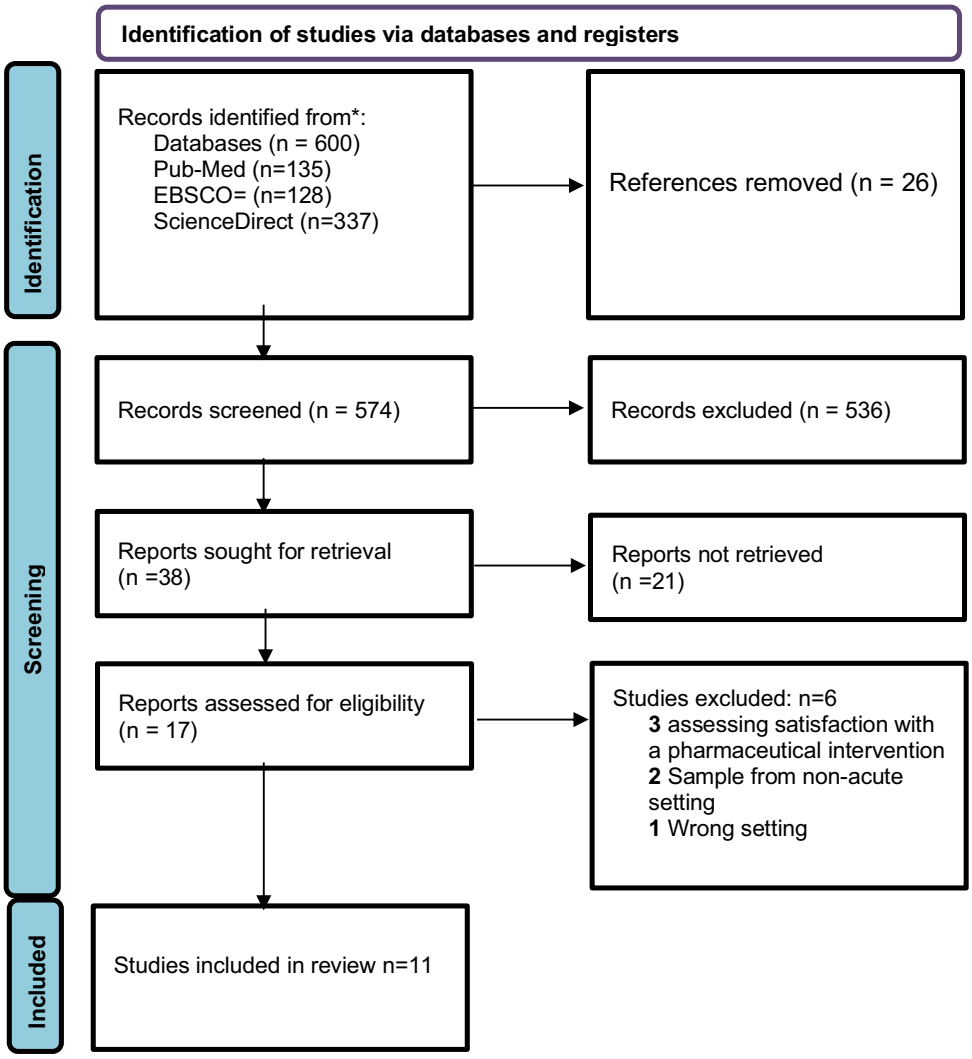

Figure 1 PRISMA Flowchart of Search Process provides summary of the screening process and number of articles recorded at the different stages in the process. Adapted from Moher D, Liberati A, Tetzlaff J, et al. The PRISMA Group. Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med.* Creative Commons.
Abbreviation: PRISMA, The Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

Inclusion Criteria

The review included studies published within the last 10 years. In addition, only quantitative interventional studies with experimental or quasi-experimental designs were included. The study participants were adults between the ages of 19 and 65. Moreover, studies were included if the participants were admitted to acute care settings.

Exclusion Criteria

The precise criteria of exclusion were determined in the protocol of this review. These exclusion criteria are pilot or feasibility studies; those published in languages other than English and measuring satisfaction with a specific treatment, medication, procedure, or intervention (therapeutic intervention). Studies were excluded if they have been conducted in outpatient departments or at discharge, or if they targeted specialty areas such as maternity, operation rooms, mental health wards/hospitals, or rehabilitation centers. Studies measuring satisfaction of pediatric/children, older adults, and family members and studies with qualitative, mixed methods, or non-experimental designs were also excluded. Detailed information about the reasons for rejecting the articles is presented in Table 1.

Selection Process

After the search results were imported into Covidence's Extraction 2.0, duplicate studies were removed automatically.

Table 1 Reasons for Rejecting the Articles

Search Engines	Number of Extracted Articles	Number of Rejected Articles	Reasons of Rejection & Numbers of Rejected Articles
Pub-Med	135	132	• Duplicated (7) • Medication, Procedure (42) • Studies that have been conducted in outpatient departments or after discharge (18) • Studies in specialty areas: maternity, operation rooms, mental health wards/ hospitals, or rehabilitation centers (52) • Studies measuring satisfaction of pediatric/children, older adults, and family members (7) • Studies with qualitative, mixed methods, or non-experimental designs (6)
EBSCO	128	125	• Duplicated (7) • Medication, Procedure (51) • Studies that have been conducted in outpatient departments or after discharge (32) • Studies in specialty areas: maternity, operation rooms, mental health wards/ hospitals, or rehabilitation centers (19) • Studies measuring satisfaction of pediatric/children, older adults, and family members (12) • Studies with qualitative, mixed methods, or non-experimental designs (4)
ScienceDirect	337	332	• Duplicated (12) • Medication, Procedure (146) • Studies that have been conducted in outpatient departments or after discharge, (71) • Studies in specialty areas: maternity, operation rooms, mental health wards/ hospitals, or rehabilitation centers. (59) • Studies measuring satisfaction of pediatric/children, older adults, and family members (19) • Studies with qualitative, mixed methods, or non-experimental designs (25)

Screening Phase

Titles and abstracts were screened for eligibility criteria before the full-text articles were reviewed. The full articles were screened to exclude the studies that are not relevant to the aim of the review. A total of 600 articles were identified in the initial search of the electronic databases. They were published between 2017 and December 12, 2022. Twenty-six studies were duplicated in different search engines and were removed. A total of 574 titles and abstracts were screened by three reviewers (NA, HA, and SA) against the review eligibility criteria. Five-hundred-fifty-seven articles did not meet the criteria and were excluded, leaving 17 articles to be reviewed thoroughly in full by reviewers (AA, AA, and SA). Then, six additional articles were excluded for the reasons specified in Figure 1 that shows the PRISMA flow diagram results and selection criteria.[11] In the end, only 11 studies were suitable for inclusion in the review.

Inclusion Phase

Data Extraction

For the purpose of data extraction, an adapted Cochrane data extraction tool was used. The tool was entered into Covedience's Extraction 2.0. Content analysis was used in this literature review and applied to the studies that met the criteria. The contents that were extracted are: Authors and year of publication, sample and sampling techniques, interventions, study variables, and the major outcomes of the studies. Detailed information on the main components of the interventions, intervention duration, timing intervention, delivery processes, providers, and the recipients were also extracted. Two researchers (SA, AR) reviewed and extracted the data independently into a table A third author resolved any conflicting decisions (AA). Tables 2 and 3 provide detailed information on the extracted data.

Table 2 Extracted Data 1

Authors	Sample/ Sampling Technique	Intervention	Study Variables	Outcome
Allenbaugh et al 2019[12]	A total of 76 internal medicine residents and 85 medical service nurses. The sampling technique that utilized is purposive sampling. Moreover, 200 pre-test and 222 post-test using discharged patients from the resident-run medicine units over a 6-month period.	The authors designed and implemented a curriculum for physicians and nurses focusing on clear communication, to improve their knowledge and attitudes toward health literacy, communication skills with patients, and inpatient communication-specific patient satisfaction scores.	IV: Curriculum development and implementation then evaluation. DV: Resident and nurse knowledge, attitudes, and confidence. Resident and nurse communication Skills. Patient Satisfaction.	Knowledge and attitudes significantly increased for residents and nurses. Observed clinical communication skills increased significantly in most domains for residents and nurses, and there was moderate improvement in communication-specific patient satisfaction scores.
Craig-Schapiro et al 2018[13]	Total of 153 patients (Pre- intervention) from Oct 2016- Feb 2017 100 patients (Post-intervention) from Feb 2017-May 2017. However, the sampling technique utilized is purposive sampling. Patients included under one of six different gastrointestinal or surgical oncology and located on one of four designated inpatient hospital units.	Patients and their families received "facesheet" that contains profiles, photos, training level, and roles of surgical team members.	IV: Providing "facesheet" which contain the names, photographs, roles of surgical team and level of training DV: knowledge and satisfaction.	A significant increase in the importance of knowing the surgical team members and their roles. Scores in all satisfaction domains increased in the post-intervention period, although were not statistically significance.
Hladkowicz et al 2020[14]	A total of 183 participants were selected utilizing quota sampling. The before phase: n=90 participants, enrolled between April 2018 and September 2018. The after phases: n=93. Participants were enrolled between December 2018 and May 2019.	Standard care phase: Not receiving formal or personalized risk calculation and/or communication, no built-in risk scores or calculators included in the electronic health record, and anesthesiologists were not required to document risk calculators at their discretion. Procedure- specific documentation about preparation for surgery and day of surgery instructions were received by the patients. PREDICT app phase: personalized risks were communicated. Participants received an iPad with the app. Health condition answers were entered to populate the risk calculator. Surgical procedure codes were entered by the research assistant. Participants were asked to provide up to three benefits that they hoped to achieve from having surgery. The app generated personalized risk predictions, anticipated benefits, personalized risk estimates and three evidence- based questions used to encourage shared-decision-making.	IV: A preoperative exposure to the PREDICT app, a personalized risk communication tool, DV: Patient knowledge and satisfaction after anesthesiology consultations compared with standard care.	Compared with the standard care phase, the PREDICT app phase had a higher satisfaction score. Exposed to patient-facing, personalized risk communication app increased satisfaction for adults before the elective inpatient surgery.

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Table 2 (Continued).

Authors	Sample/ Sampling Technique	Intervention	Study Variables	Outcome
Kullberg et al 2017[15]	A total of 116 patients at baseline data from February to May 2014. 209 patients at post-intervention from September 2014 to May 2015. However, the Sampling technique that utilized is Purposive sampling	Intervention group: person-centered handover related to the shift-to-shift report at the patient's bedside. The control groups non-verbal handover which was the standard care for all three groups before the study.	IV: comparing person-centered handover with non-verbal handover DV: patient satisfaction.	Person-centered handover had a statistically significant higher score on the subscale measuring exchange of information between caregivers compared to the control groups. No other differences were found in patient satisfaction between the groups.
Bowers et al 2017[16]	A total of 93 patients were randomized to either the multimedia presentations group (n=49) or the control group (n=44) utilizing the sealed envelope method. However, the sampling Technique utilized is Systematic random sampling.	The control group received traditional verbal consent. A multimedia presentations group were provided a two-minute video of their procedure on an iPad after the session computer plus to the traditional verbal consent.	IV: Utility of multimedia presentations during informed consent process DV: Understanding of procedures and patient satisfaction of the consent process.	The intervention significantly increased total comprehension in all procedure types controlling for procedure type (p=0.003). A significant difference in the intervention group in the intervention group who had higher overall satisfaction after controlling for surgery type.
Creber et al 2018[17]	Total 426 patients. The sampling technique that utilized is systematic random sampling based on hospital room number using computer; 3 arms used on a 1: 1: 1 basis and stratified by study unit. (n=148= usual care, n=132 tablet only, n=146 tablet and portal)	Patients were randomized to 1 of 3 arms: 1) usual care; 2) tablet-only; 3) tablet with access to the inpatient portal. Participants completed baseline and follow-up assessments to assess changes in patient activation (primary outcome), engagement with health information, and all-cause 30-day hospital readmissions.	IV: Inpatient portal intervention DV: Patient activation, patient satisfaction, patient engagement with health information and 30-day hospital readmissions.	There was no evidence of a difference in patient satisfaction among patients assigned to the inpatient portal intervention compared to usual care or the tablet-only group.
Oshvandi et al 2021[18]	A total of 89 patients undergoing transradial coronary angiography (TCA). The sampling technique that is utilized is random sampling (n=44 intervention, n=45 control)	The control and intervention groups received standard care which includes counseling by the nurses and being familiar with the procedure using an information sheet. Intervention group: watched a video-based educational program of the catheterization laboratory's atmosphere, equipment, their procedure, and the health care professionals. Patients received a pamphlet of educational content, and the researcher answered their questions at the end of the education.	IV: video-based educational program DV: satisfaction and comfort in patients undergoing TCA.	The mean scores of satisfactions and comfort in the intervention group was higher than the control group after the intervention.

McAlearney et al 2022[19]	A total of 2892 participants were randomized to 1 of the 4 study groups in a 2-step process. However, the sampling technique that utilized is stratified random sampling. First, patients were randomly assigned into 1 of the 2 technology groups at the time of tablet provisioning. Patients were assigned in the high-touch treatment groups by balancing patient loss to follow-up caused by patient discharge before the intervention.	Patients were randomized to 1 of 4 groups: (1) full technology and high level of training (full-tech, high-touch); (2) full technology and low level of training (full-tech, low-touch); (3) less technology and high level of training (lite-tech, high-touch); or (4) less technology and low level of training (lite-tech, low-touch). The full-tech version: the app includes 10 functions. The lite-tech version: includes 3 functions. The touch intervention: training offered by a technology navigator on how to use the inpatient portal. The high-touch groups: in-person training involved reviewing the functions available and supervising patients as they navigated tasks in the portal, engaging in both audit and feedback about task success. Patients in group 1 received access to the full-tech training video (11 minutes, 17 seconds) and a visit by a technology navigator Patients in group 2 received access to the full-tech training video and a brief visit from a study team member to introduce the study. Patients in group 3 received access to the lite-tech training video and a visit by a technology navigator Patients in group 4 received access to the lite-tech training video and a brief visit from a study team member to introduce the study.	Effect of patient training and portal functionality on use of an inpatient portal and on patient satisfaction and involvement with care.	Patients who received in-person training had higher odds of reporting being satisfied in the 6-month post-discharge survey. Similarly, patients who received the full-tech intervention had higher odds of reporting being satisfied in the 6-month post-discharge survey.
Stein et al 2018[20]	A total of 70 patients (47 intervention group who were trained on the portal use and 23 received usual care). The sampling technique that was utilized is systematic random sampling	Intervention group: an in-person introduction to the online patient portal conducted during patient hospital stay. Control group: did not receive intervention training or reminder emails but were invited to use the portal per hospital policy and usual care protocols. Staff members do not use a script and they do not explain details of the patient portal or discharge summaries.	IV: Teach hospitalized vulnerable patients to access their discharge summaries using electronic patient portals. DV: online portal use and uptake by hospitalized patients.	Both the intervention and the control patients preferred hospitals with online record access, feeling that access to medical records would increase their trust in doctors and their satisfaction with care. Portal registration was higher in those who received training in portal use.

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Table 2 (Continued).

Authors	Sample/ Sampling Technique	Intervention	Study Variables	Outcome
Wang et al (2019)[21]	Total of 154 patients with chronic obstructive pulmonary disease (COPD) (77 in intervention group, 77 in control group). The sampling technique that is utilized is random sampling.	Participants were randomized to either a usual care or a self-management program. The interventionists were blinded to the participants' baseline and allocation sequence. The statistician was blinded to the participants' results during the study.	The effectiveness of a nurse-led self-management program on COPD-related hospital admissions and emergency department visits, exercise capacity, health-related QoL and satisfaction.	The intervention group had a higher median score than the control group for the total Transitional Care Patient Satisfaction Questionnaire score and service satisfaction and education satisfaction domains at both 6 and 12 months.
Pace et al 2017[22]	A total of 25 patients were randomized to usual care (n=12) or the BATHE intervention (n=13). However, the sampling technique that utilized is random sampling	Background Affect Troubles Handling Empathic Statement (BATHE) includes 4 questions to elicit descriptions of patient current medical or non-medical situation. At baseline: measurement of satisfaction. Intervention group: received daily BATHE intervention for five days or until discharge. Post-intervention: A patient satisfaction measurement.	IV: BATHE intervention DV: Patient satisfaction. BATHE was designed to address psychological distress of patients and strengthen the relationship between physician and patient.	BATHE did not improve satisfaction by making patients feel more respected, informed or attended to. Rather, effects on satisfaction were mediated by patients' perception that their physician showed "a genuine interest in me as a person".

Abbreviations: IV, Independent Variable(s); DV, Dependent Variable(s); n= Sample Size; p=Significant level; PREDICT, Personalized Risk Evaluation and Decision Making in Preoperative Clinical assessment application; TCA, Transradial coronary angiography; COPD, Chronic Obstructive Pulmonary Disease; QoL, Quality of Life; BATHE, A Background Affect Troubles Handling Empathic Statement.

Table 3 Extracted Data 2

Study ID, Publication Year, and Country	Main Intervention Components	Intervention Duration	Intervention Timing	Intervention Delivery Process	Intervention Providers	Intervention Recipients
Allenbaugh et al 2019[12] United States	Communication skills curriculum	Two consecutive weeks for residence and 1 month for nurses. All received the curriculum once	One hour workshop for nurses and 2 hours for the residents' workshop and videos.	Via workshops and videos	Nurse educators for internal medicine services nurses and clinicians for internal medicine physicians	Nurses and physicians at an internal medicine department.
Craig-Schapiro et al 2018[13] United States	Factsheets containing team member profiles, photos, training level, and roles.	N/A	N/A	Handing out the sheets	Residents of the surgical team.	Patients under one of six different gastrointestinal or surgical oncology services
Hladkowicz et al 2020[14] Canada	A Personalized Risk Evaluation and Decision Making in Preoperative Clinical (PREDICT) assessment application.	NM	NM	By electronic information and discussions	Clinicians	Patients
Kullberg et al 2017[15] Sweden	A handover technique combining the Australian standard operating protocol (SOP) with SBAR (Situation-Background-Assessment-Recommendation).	NM	2 to 10 minutes	Verbally and using documents	Nurses	Nurses and patients
Bowers et al 2017[16] Canada	Multimedia-based presentations	Prior to the intervention procedure	2 minutes	Via a computer-generated video	Clinicians	Patients undergoing first-time intervention for peripherally inserted central venous catheter (PICC)
Creber et al 2018[17] United States	An electronic portal containing names and photos of care team members, short videos on medications, allergies, diagnostic test orders and results, diet, vital signs, and weight. In addition to functions to: - Report pain level. - Communicate comments and questions. Acknowledge care team members with a star rating.	During hospitalization	15 minutes	Electronically	Research coordinators	Patients
Oshvandi et al 2021[18] Iran	Introduction of the catheterization laboratory's atmosphere, equipment, their procedure, and the health care professionals.	24 hours before the transradial coronary angiography	40 minutes	Via an educational video.	Nurses	Patients

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Table 3 (Continued).

Study ID, Publication Year, and Country	Main Intervention Components	Intervention Duration	Intervention Timing	Intervention Delivery Process	Intervention Providers	Intervention Recipients
McAlearney et al 2022[19] United States	- Access to hospital portal - Training	During the hospital stay	Depended on the intervention group	By training and education	Team members identified as technology navigators	Patients at a non-cancer center
Stein et al 2018[20] United States	An in-person introduction to the online patient portal.	5–30 minutes	NM	By education	Trained research personnel	Patients
Wang et al 2019[21] China	A booklet and educational materials on chronic obstructive pulmonary disease (COPD) and relevant management strategies.	45 minutes each	5 times	By a booklet and individually tailored education sessions	Advanced respiratory nurses	Patients with COPD
Pace et al 2017[22] United States	Background Affect Troubles Handling Empathic Statement (BATHE) includes 4 questions to elicit descriptions of patient current medical or non-medical situation	Once a day until discharge	From 1–2 minutes less than 5 minutes.	Via discussions between patients and clinicians	Physicians	Patients

Abbreviations: NA, Not Applicable; NM, Not Mentioned; PREDICT, Personalized Risk Evaluation and Decision Making in Preoperative Clinical assessment application; SOP, Standard operating protocol; SBAR, Situation, Background, Assessment, and Recommendation; PICC, Peripherally inserted central venous catheter; COPD, Chronic Obstructive Pulmonary Disease; BATHE, A Background Affect Troubles Handling Empathic Statement; HCAHPS, Hospital Consumer Assessment of Healthcare Providers and Systems.

Quality Appraisal

Quality appraisal was done on eligible studies to assess the quality of the studies by using two tools. The PEDro (Physiotherapy Evidence Database) critical assessment tool is a commonly used instrument for assessing the quality of randomized controlled trials (RCTs). It comprises 11 elements, each of which analyzes a different aspect of the study, such as eligibility requirements, random allocation, blinding, and follow-up.[23] Each item is rated as present (1 point) or absent (0 point), with a maximum score of 10. The 11th item is a distinct rating of the study's external validity.

On the other hand, the JBI critical appraisal checklist for quasi-experimental studies (JBI-QE) tool was used to evaluate non-RCT studies.[24] The JBI-QE has nine items; their scores were used to grade the quality of each trial as high, moderate, or low. Each question requires a "yes", "no", or "unclear" response; in certain cases, a "not applicable" (NA) response is acceptable.[24] Two authors performed the appraisal (HA, NA), and a third author resolved any conflicting decisions (AA). Given that the purpose of this review was to investigate interventions seeking to improve patient satisfaction, studies were not excluded based on methodological quality. Detailed descriptions of the quality appraisal of each article are presented in Tables 4 and 5.

Results

In total, eleven studies were included in the systematic review. Out of the included studies, four used quasi-experimental (pre- and post-intervention) methods,[12–15] whereas the other seven studies were RCTs (see Tables 2 and 3 for detailed information). The results were divided into parts based on the extracted contents.

Sample/ Sampling Technique

Four studies used pre- and post-intervention methods of sampling[12–15] while five studies used intervention and control/ usual care groups.[16,18,20–22] One of the studies compared the intervention between three groups[17] and another study compared the intervention between 4 groups.[19] These studies were conducted in several countries, including the United States,[12,13,17,19,20,22] Canada,[14,16] Sweden,[15] Iran,[18] and China.[21] The sample sizes of the studies ranged between 25 and 2892 patients with a mean of 453 patients and a median of 183 patients.

Table 4 Quality Appraisal for Quasi-Experimental Studies

JBI Critical Appraisal Checklist for Quasi-Experimental Studies (non-Randomized Experimental Studies)	Allenbaugh et al 2019[12]	Craig-Schapiro et al 2018[13]	Hladkowicz et al 2020[14]	Kullberg et al 2017[15]
Is it clear in the study what is the "cause" and what is the "effect" (ie there is no confusion about which variable comes first)?	Yes	Yes	Yes	Yes
Were the participants included in any comparisons similar?	NM	NM	NM	NM
Were the participants included in any comparisons receiving similar treatment/ care, other than the exposure or intervention of interest?	NA	Yes.	Yes.	Yes.
Was there a control group?	Yes	No	Yes.	Yes.
Were there multiple measurements of the outcome both pre and post the intervention/exposure?	Yes.	Yes	Yes	Yes.
Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?	No	No	No	Yes
Were the outcomes of participants included in any comparisons measured in the same way?	Yes	Yes	Yes	Yes
Were outcomes measured in a reliable way?	Yes	Yes	Yes	Yes
Was appropriate statistical analysis used?	Yes	Yes	Yes	Yes

Note: Adapted with permission from Wolters Kluwer Health, Inc. Barker TH, Habibi N, Aromataris E, et al. The revised JBI critical appraisal tool for the assessment of risk of bias for quasi-experimental studies. *JBI Evidence Synthesis*. 2024;22(3):378-388. Available from: https://journals.lww.com/jbisrir/fulltext/2024/03000/the_revised_jbi_critical_appraisal_tool_for_the.4.aspx.[25]

Abbreviations: NA, Not Applicable; NM, Not Mentioned.

Table 5 Quality Appraisal for Randomized Controlled Trials Studies

PEDro Scale	Bowers et al 2017[16]	Creber et al 2018[17]	Oshvandi et al 2021[18]	McAlearney et al 2022[19]	Stein et al 2018[20]	Wang et al 2019[21]	Pace et al 2017[22]
Eligibility criteria were specified	1	1	1	1	1	1	1
Subjects were randomly allocated to groups (in a crossover study, subjects were randomly allocated an order in which treatments were received)	1	1	1	1	1	1	1
Allocation was concealed	1	NM	1	0	1	1	1
The groups were similar at baseline regarding the most important prognostic indicators	1	1	1	1	1	1	No control
There was blinding of all subjects	NA	0	1	0	1	1	1
There was blinding of all therapists who administered the therapy	NM	0	0	0	0	0	1
There was blinding of all assessors who measured at least one key outcome	NM	0	0	0	0	0	1
Measures of at least one key outcome were obtained from more than 85% of the subjects initially allocated to groups	1	1	1	1	1	1	1
All subjects for whom outcome measures were available received the treatment or control condition as allocated or, where this was not the case, data for at least one key outcome was analyzed by "intention to treat"	1	1	NA	1	1	1	1
The results of between-group statistical comparisons are reported for at least one key outcome	1	1	1	1	1	1	1
The study provides both point measures and measures of variability for at least one key outcome	1	1	1	0	1	1	1
Total	8	7	8	6	9	9	10

Note: 1= Present; 0= Absent.
Abbreviations: NA, Not Applicable; NM, Not Mentioned.

Main Intervention Components and Delivery Process

The main intervention components are as the following: Communication skills curriculum that delivered workshop and videos;[12] and handing out factsheets containing the surgical team members' profiles, photos, training level, and roles.[13] A Personalized Risk Evaluation and Decision Making in Preoperative Clinical (PREDICT) assessment application was implemented to generate personalized risk predictions and personalized risk estimates, as well as anticipated benefits, while three evidence- based questions were used to encourage shared-decision-making.[14] A handover technique related to the shift report combining the Australian standard operating protocol (SOP) with Situation-Background-Assessment-Recommendation (SBAR) was delivered verbally, using documents.[15] Traditional consent and multimedia-based presentations of patients' procedure was delivered by a computer-generated video.[16] An inpatient electronic portal contained names and photos of care team members, while short videos on medications, allergies, diagnostic test orders and results, diet, vital signs, and weight were used to assess changes in patient activation, engagement with health information, patient satisfaction, and all-cause thirty-day hospital readmissions.[17]

An educational video program was made of the catheterization laboratory's atmosphere, equipment and their procedures, and the respective health care professionals.[18] A patient training and portal functionality navigator on the use of an inpatient portal to enhance satisfaction and involvement with care.[19] There was an in-person introduction to the online patient portal,[20] and a nurse-led self-management program on Chronic Obstructive Pulmonary Disease (COPD)-related hospital admissions.[21] A Background Affect Troubles Handling Empathic Statement (BATHE) contained four questions to elicit descriptions of patients' current medical or non-medical situations, address psychological distress of patients, and reinforce physician–patient relationships.[22]

Intervention Duration and Timing

In terms of duration, interventions were delivered once for two consecutive weeks for residence and one month for nurses,[12] prior to the intervention,[16] during hospitalization,[17] 24 hours before the trans-radial coronary angiography,[18] 5–30 minutes,[20] 5 times,[21] and once a day until discharge.[22] The intervention times were a one-hour workshop for nurses and 2 hours for the residents,[12] 2 to 10 minutes,[15] 2 minutes,[16] 15 minutes[17] 40 minutes,[18] depending upon the intervention group[19] at 45 minutes,[21] and from 1 to 2 minutes less than 5 minutes.[22]

Providers and Recipient of the Intervention

The interventions included in this study were provided by several groups: nurse educators and physicians[12] residents,[13] physicians only,[14,16,22] nurses only,[15,18,21] research coordinators or trained research personnel,[17,20] and technology navigators.[19] However, the recipients of these interventions were nurses and physicians in one of the studies[12] and nurses and patients in another study.[15] The recipients of the rest of the studies were patients.[13,14,16–22]

Outcome Measurement

Patient satisfaction scores were measured by the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS).[12,19] The questions were developed by the authors and reviewed by the Johns Hopkins Hospital Family Advisory Council,[13] the State-Trait Anxiety Inventory. For satisfaction,[14] review entailed the European Organization for Research and Treatment of Cancer (EORTC) IN-PATSAT32 questionnaire,[15] developed by the author.[16,20] The questions were obtained from the Telemedicine Satisfaction and Usefulness Questionnaire,[17] the patient satisfaction questionnaire (PSQ),[18] and the COPD Transitional Care Patient Satisfaction Questionnaire (CTCPSQ).[21] One item at the baseline and a twenty-item survey adapted from RAND Health's Patient Satisfaction Questionnaire-III were administered post-intervention.[22]

Intervention Outcomes

All studies included in the systematic review examined patient satisfaction as an outcome variable. Most studies showed an enhancement in patient satisfaction scores in the intervention group.[14,16,18,19,21] It increased moderately in the intervention group in one of the studies.[12] Although patient satisfaction scores in other studies increased, they were not statistically significant[13,20] or showed no statistically significant difference between the groups.[15,17,22]

Discussion

The included studies examined the effectiveness of various interventions on patient satisfaction, which indicates the patient's experience in acute care departments. The studies were conducted in different acute care wards in several countries. These studies involved various types of patients from different wards such as general surgery, internal medicine, pulmonary, vascular wards. Four studies used a pre- and post-intervention design, while seven studies were RCTs. The main intervention components vary between the studies, which reduce the generalizability of the results.

The studies conducted by Allenbaugh et al 2019[12] introduced the intervention to medicine residents and nurses while a study conducted Kullberg et al 2017[15] introduced the intervention to both patients and nurses. The difference between the aforementioned studies and the other included studies is that later focused only on patients.[13,14,16–22] The participants who completed the patient satisfaction survey in all the pre-interventions were different from those participating in the post-intervention group.

Extraneous and confounding variables affected the differences between pre- and post-intervention in the single groups while the differences affected the baseline assessment. Hence, none of the included studies controlled for the effect of those variables during the analysis phase; the studies introduced the intervention to patients only and not others health professionals. Thus, the results of the study might face the accusation of sampling or testing bias.

Different questionnaires and interventions were utilized to enhance patient satisfaction within different acute care wards of the designated hospitals. Seven studies adopted the questionnaire from previous publications while a study conducted by Hladkowicz et al 2020[14] developed its questionnaire based on the Institute for Healthcare Improvement (IHI). However, the study conducted by Bowers et al 2015[16] stated as a limitation of the study that the questionnaire had not been validated prior to conducting the research. Moreover, the study conducted by Stein et al 2018[20] and Bowers et al 2015[16] did not mention that the questionnaire was developed or adapted and adopted from previous publications.

On the one hand, a study conducted by Wang et al 2019[21] and Kullberg et al 2017[15] shows a questionnaire with multiple dimensions or domains while other studies utilized a few questions to evaluate the satisfaction level; it indicates that the variable of the study was not based on proven theory. Theories were utilized in intervention studies as a guide to develop questionnaires and interventions.

Educational videos, one-on-one education, platforms, endorsement and evaluation sheets, pictures of certain staff and the words used are types of intervention that had been evaluated to ensure maximum effects on patient satisfaction. Those interventions were developed, adopted, or adapted from other studies. The studies conducted by Bowers et al, 2015[16] Craig-Schapiro et al, 2018[13] Hladkowicz et al, 2020[14] Creber et al, 2018[17] McAlearney et al 2022[19] and Stein et al 2018[20] developed their interventions from different scientific sources, but those sources were not apparent in their studies. Meanwhile, studies conducted by Kullberg et al, 2017[15] Oshvandi et al, 2021[18] and Pace et al 2017[22] adopted their intervention from Wentworth et al 2012[26] Ying et al 2012,[27] Lattuca, Benoit, et al, 2018[28] Joseph & Marian, 1999[29] Russell 2009[30] respectively.

Notably, the only study that adapted the intervention was conducted by Wang et al 2019.[21] The comparison groups in intervention studies utilizing two groups differed between the included studies. All the studies utilized either routine/traditional care or a limited subset of the compared intervention. Thus, all the interventions implemented in the aforementioned studies were effective in enhancing patient satisfaction within the acute care wards of hospitals, except for five studies.

Interventions included factsheets about the team members,[13] verbal and documented handover techniques,[15] an electronic portal using information about the team members and videos of orders and results of patient diagnostic tests,[17] the introduction to the online patient portal,[20] and BATHE techniques that introduced 4 questions to patients to elicit their current medical and non-medical situation by means of discussion between the patients and their clinicians. On the other hand, six studies showed a statistically significant difference in patient satisfaction scores between the groups.[12,14,16,18,19,21] The non-pharmacological interventions that have been used in acute settings to improve inpatient satisfaction from this review are as follows: Communication skills curriculum,[12] a PREDICT assessment application,[14] a traditional consent and a multimedia-based presentations of patient's procedure,[16] an educational video program of the catheterization laboratory's atmosphere, equipment and their procedures, and the health care professionals,[18] a patient training and portal functionality navigator on the use of an inpatient portal to enhance satisfaction and involvement with care,[19] and finally, a nurse-led self-management program on COPD-related hospital admissions.[21]

On the other hand, all the included studies utilized per-protocol analysis except the study conducted by Wang et al utilized intention-to-treat. In addition, none of the included studies utilized Multivariate Analysis of Variance (MANOVA), Multivariate Analysis of Covariance (MANCOVA), or Generalized Estimation Equation (GEE) although repeated measures within the included studies, and more than two dependent variables were involved in those studies. In this regard, the probability of type two error is expected within the included studies. Moreover, the central interval was reported in studies conducted by McAlearney et al as ORs, 0.50 [95% CI, 0.29–0.85]), Hladkowicz et al as (0.8 points; 95% CI, 0.1 to 1.4; P = 0.03), while others did not. In terms of the F ratio which indicates the sustainability of variation within groups was reported in studies conducted by Bowers et al as ($F=44.06$, $p<0001$), while other studies did not. However, all the studies reported a P value which indicated the level of significance, and all the studies reported p values <0.05.

Limitations

The included studies in this systematic review used inconsistent settings, sampling techniques, and interventions. Also, a measurement and statistical variation between the studies was noticed. Therefore, a generalization of the results is not applicable because of heterogeneity. In addition, this study may include risks of study selection bias, inadequate blinding, and selective outcome reporting. To overcome such a limitation, two authors independently reviewed and extracted data from the included articles in the study. The rest of the authors reviewed the extracted data, and disputes were resolved through discussions.

Implications for Practice and Future Research

This systematic review highlights recommendations for future research. For future research, a more detailed description of the evaluated interventions might aid in their transferability and any further evaluation. Moreover, the use of established and validated patient satisfaction scales and questionnaires could improve the quality and reliability of the outcomes. By the same token, when developing a novel measurement tool for patient satisfaction, the role of theory should be considered. In addition, further studies are needed to evaluate the effectiveness of intervention among all patients in different acute care departments at the same time.

Conclusion

This study aimed at systematically reviewing the evidence on non-pharmacological interventions that can enhance patient satisfaction among inpatient acute settings. Eleven articles that met the inclusion criteria were used in the review. Regardless of the heterogeneity found in the studies, six out of the eleven included studies that used different types of intervention modules were effective in improving acute care patient satisfaction. Further studies are needed to evaluate the effectiveness of intervention among patients in different acute care departments at the same time.

Abbreviations

PRISMA, The Preferred Reporting Items for Systematic Reviews and Meta-Analyses; PICO framework, Population, Intervention, Control or Comparator, and Outcome; PEDro, Physiotherapy Evidence Database; RCTs, Randomized controlled trials; JBI-QE, JBI critical appraisal checklist for quasi-experimental studies; NA, Not applicable; PREDICT, Personalized Risk Evaluation and Decision Making in Preoperative Clinical assessment application; SOP, Standard operating protocol; SBAR, Situation, Background, Assessment, and Recommendation.

COPD, Chronic Obstructive Pulmonary Disease; BATHE, A Background Affect Troubles Handling Empathic Statement; HCAHPS, Hospital Consumer Assessment of Healthcare Providers and Systems; EORTC, The European Organization for Research and Treatment of Cancer; PSQ, patient satisfaction questionnaire; CTCPSQ, COPD Transitional Care Patient Satisfaction Questionnaire; IHI, Institute for Healthcare Improvement.

Ethical Approval

Ethical approval is not necessary because this is a literature review that involves research studies that are available in the public domain and the data have been properly anonymized. Also, no data from human subjects was collected to conduct this literature review.

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The authors have no conflicts of interest to disclose in this work.

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