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Mixed Methods Study of Nurse Assessment of Patient Preferences for Engagement During Hospitalization

Teresa A Jerofke-Owen

Assistant Professor, Marquette University College of Nursing, Milwaukee, WI

Alexandria Zielinski

Graduate Student, Marquette University College of Nursing, Milwaukee, WI

Roger L Brown

Professor, Research Design and Statistics Unit, University of Wisconsin-Madison

# Abstract

## Background

Global healthcare initiatives emphasize the importance of engaging patients in their healthcare to improve patients’ experience and outcomes. Assessing patient preferences for engagement is critical, as there are many ways patients can engage in their care and preferences vary across individuals.

## Objective

The primary purpose of this study was to evaluate the effect of implementation of the Patient Preferences for Engagement Tool 13-Item Short Form (PPET13) during hospitalization on patient and nurse experience of engagement. Readmissions and emergency department (ED) usage within 30 days postdischarge were also examined.

## Methods

The mixed methods study was conducted within two medical units in the United States between December 2018 and May 2019. Preimplementation group patients completed a demographic survey and the Patient Experience of Engagement Survey (PEES) on discharge. Implementation group patients completed the PPET13 within 24 hours of admission with their nurse and the demographic survey and PEES on discharge. A focus group with nurses who implemented the PPET13 was conducted following the implementation period. Data analysis included confirmatory factor analysis, multiple and logistic regression, and qualitative content analysis.

## Results

There was significant improvement in PEES scores during the implementation phase. The PEES score was a significant predictor of ED visits, but not 30-day readmissions. Nurses were not always certain how to best integrate patient preferences for engagement into their care delivery and suggested integrating the PPET13 into the electronic health record to assist with streamlining the assessment and communicating preferences across the care team.

## Discussion

Assessing patients’ preferences for engagement using the PPET13 was associated with an improved experience of engagement, which was found to mediate the relationship between utilization of PPET13 and ED usage within 30 days postdischarge. Use of a patient engagement preference tool, such as the PPET13, can help inform the delivery of individualized engagement strategies to improve patient and family engagement and outcomes; however, nurses need formalized education on how to tailor their care to meet the individual engagement preferences of their patients.

Globally, healthcare systems are urged to actively engage patients and their families in their healthcare through individualized, quality initiatives that emphasize the patient care experience and delivery of value-based care (Bombard et al., 2018; World Health Organization, 2016). Efforts to engage patients and their family members in their care have been associated with a 50% reduction in adverse events such as falls and injuries in hospitalized patients, improved patient satisfaction with care, greater confidence and participation in treatment, and a change in organizational culture (Dykes et al., 2020; Kuntz et al., 2014; Weingart et al., 2011). Ways that healthcare providers can engage patients and their families in their healthcare include information sharing, encouraging decision-making and goal setting, inviting patients and families to collaborate with the care team, and encouraging the use of electronic health records (EHR) (Agency for Healthcare Research and Quality [AHRQ], 2019; Swartwout et al., 2016).

The assessment of patient preferences is a critical element to ensure that individualized care is delivered, central to definitions of evidence-based practice, and leads to higher treatment satisfaction and superior clinical outcomes (Burman et al., 2013; Lindhiem et al., 2014; Tzelepis et al., 2015). It is crucial to evaluate patient preferences for engagement because engagement occurs across a continuum and not everyone is interested in engaging in all aspects of their care (Carman et al., 2013). For example, a patient may want to be informed about their care but may not want to make the final decision about their care plan (Jerofke-Owen & Dahlman, 2019), or they may be comfortable talking to one provider but overwhelmed to speak up during multidisciplinary rounds. Whereas younger age, higher education levels, female, and a more favorable view of health status have all been associated with wanting a more active role in healthcare (Florin et al., 2008; Hawley & Morris, 2017), older, less educated, male, and sicker patients have also reported wanting to engage in their care in some capacity (Jerofke-Owen & Dahlman, 2019; Selman et al., 2017; Tobiano et al., 2015). Too often, providers equate engagement with information giving and education and do not facilitate more active roles for patients (Coulter & Ellins, 2007; Tobiano et al., 2020).

This study was framed by elements of the Interactive Care Model (Drenkard et al., 2015). Three major concepts of the Interactive Care Model were explored in this study: (a) assessing a person’s capacity for engagement, (b) exchanging information and communicating choices, and (c) evaluating regularly. The relationships between the theoretical framework concepts, study variables, and study measures are shown in Table 1.

TABLE 1 - Linkages Between Interactive Care Model Concepts, Study Variables, and Study Measures

| **Interactive care model concept** | **Assessment of a person’s capacity for engagement** | **Exchange information and communicate choices** | **Evaluate regularly** |
| --- | --- | --- | --- |
| Interactive care model definitions (Drenkard et al., 2015) | Assessment of a person’s ability to participate in their healthcare. This may include looking at the patient’s medical history, assessment of physical symptoms, cultural values, health literacy, activation/motivation, disease burden, psychosocial support, preventive health strategies, involvement in safety, and technology use for healthcare. | During this phase, providers must listen to patients to assess their values, beliefs, and preferences for participation in their healthcare. Together, the provider and patient determine how a patient wants to participate in their care so that treatment plans can be tailored to patient preferences. Also acknowledging that not all patients will want to or be able to participate in their care. | Continuous evaluation of clinical outcomes will assist providers in providing the best engagement strategies that meet the individual needs of their patients |

| **Study variables** | **Patient characteristics** | **Patient preferences** | **Patient-reported engagement outcomes** |
| --- | --- | --- | --- |
| Study measures | a. Gender b. Age c. Ethnicity d. Perceived health status e. Chronic illness load f. Years of education g. Length of stay | Patient Preference for Engagement Tool 13-Item Short Form a. Information gathering b. Self-advocacy c. Informed decision-making d. Family involvement e. Active participation f. Electronic resources/electronic health record | Patient Experience of Engagement Survey a. Experience of information gathering b. Experience of self-advocacy c. Experience of informed decision-making d. Experience of family involvement e. Experience of active participation g. Experience with electronic resources/electronic health record f. Experience of engagement assessment g. Experience of engagement amount |

## Study Aims

The primary purpose of this study was to evaluate the effect of implementation of the Patient Preferences for Engagement Tool 13-Item Short Form (PPET13) during hospitalization on the patient and nurse experience of engagement. Secondarily, we also evaluated readmission rates and emergency department (ED) usage within 30 days of discharge. The validity and reliability of the PPET13 were examined prior to multivariate analyses. Patient characteristics associated with patient engagement preferences were also examined as part of validity testing.

# METHODS

## Study Design

A mixed methods design was used for the study. A two-sample, preimplementation (Phase 1) and implementation (Phase 2), quasi-experimental, nonblinded study design was used to examine the effect of the implementation of the PPET13 on the patient experience of engagement and postdischarge healthcare utilization (ED usage and readmissions). A focus group was conducted following completion of Phase 2 to examine the nurse experience implementing the PPET13 in practice following institutional review board approval from Medical College of Wisconsin/Froedtert Hospital.

## Sample and Setting

Hospitalized patients were recruited by convenience sampling from two medical units within a large, Magnet-designated, academic medical center in the Midwestern United States. Phase 1 was conducted from December 2018 to February 2019; Phase 2 started in March 2019 and proceeded until May 2019. Patient inclusion criteria included (a) 18 years of age or older; (b) English speaking; (c) length of stay of at least 24 hours; and (d) alert, awake, and oriented. Patients being discharged who met inclusion criteria were approached by the study staff on enrollment days.

A total (pre and post) sample of 428 patients was determined to be more than adequate to detect a standardized mean difference of *d* = 0.32, a small to medium effect size between preimplementation and implementation groups using an alpha of .05 and a power of 80%. A smaller effect size was chosen as small changes in preference and experience scores can be clinically relevant and smaller effect sizes are more frequently seen in social science research (Ferguson, 2009). Nurses were recruited for participation in a focus group by placing posters in work rooms and an e-mail from the researcher forwarded by the management team.

## Variables and Instruments

### Patient Characteristics

Patient characteristics used for data analysis (gender, age, ethnicity, and length of stay) were electronically extracted from the hospital’s data warehouse using the medical record number (MRN) and hospital encounter number found in Research Electronic Data Capture (REDCap). Elixhauser comorbidity index for readmission was calculated from ICD-9 codes; the score represents a patient’s chronic illness load and can be used as a predictor of 30-day readmissions (AHRQ, 2017). Patients self-reported marital status, years of education, and health perception on a demographic data form. Health perception was measured by asking patients, “How would you rate your health in general?” (1 = *poor*, 2 = *fair*, 3 = *good*, 4 = *very good*, 5 = *excellent*).

### Patient Preferences for Engagement Tool 13-Item Short Form

The PPET13 was adapted from a 27-item tool to evaluate patient preferences for engagement (Jerofke-Owen & Garnier-Villarreal, 2020). Items were scored on a 5-point Likert scale from 1 (*disagree*) to 5 (*agree*). Confirmatory factor analysis (CFA) supported a six-factor structure: information gathering, self-advocacy, informed decision-making, family involvement, active participation, and electronic resources. Cronbach’s alpha reliability coefficients were >.70 for all six factors. Items with the highest factor loadings in each of the six factors were retained in the shortened PPET13 scale. The PPET13 took patients around 6 minutes to complete and was written at a Grade 8 reading level.

### Patient Experience of Engagement Survey

The eight-item survey was created for this study to measure patient-reported outcomes of engagement. The first six items represent outcomes of the six factors of the PPET13. The last two items ask patients if they were asked how they would like to engage in their care and if they engaged as much as they would have liked to during their hospitalization. Items are scored on a 5-point scale from 1 (*disagree*) to 5 (*agree*). The Patient Experience of Engagement Survey (PEES) took an average of 4 minutes to complete and was written at a Grade 7 reading level.

### Readmissions and ED Visits

Readmissions and ED visits occurring within 30 days of discharge were extracted by cross-searching all the hospitals affiliated with the participating hospital’s healthcare system.

## Data Collection

Undergraduate and graduate nursing students were hired as research assistants. Following training, research assistants consented and enrolled patients into Phase 1 (preimplementation). Patients were asked to complete both the demographic form and the PEES on the day of discharge via iPads linked to the REDCap database. REDCap provides a mechanism for electronic data collection and was developed specifically to protect individual’s private health information from fraud and theft.

During Phase 2, there was a unit-level implementation of the PPET13 as a new nursing procedure to assess patient preferences for engagement in care. Over 2 weeks between Phases 1 and 2 data collection, nurses were educated on the study purpose and the PPET13 tool during staff meetings for all shifts. The importance of assessing patient preferences for engagement was discussed. Before completing the PPET13, patients were given an information sheet about the study in their admission packets and were given the opportunity to opt not to have their PPET13 assessment data included in the study. Nurses were instructed to ask patients the items on the PPET13 within 24 hours of admission at a time that was deemed appropriate given acute illness burden, stress, and fatigue that many patients experience. The completed PPET13 was placed on the patient’s whiteboard so everyone caring for the patient could see the patient’s reported preferences. If patients agreed to participate, nurses or study team members asked patients to complete the demographic form and the PEES via unit iPads through REDCap at the time of discharge, after again inputting the patients’ MRN and hospital encounter numbers for data linking purposes. The nurses also inputted the PPET13 responses into REDCap before discharge. Several times per week, study team members were present on the units to answer questions, ensure that patients admitted the prior day had completed the PPET13, and assist with collection of discharge surveys. In instances when the PPET13 was missed and the current nurse was busy, a team member completed the PPET13 with the patient, and patient answers were communicated with the nurse. Posters explaining the study were also placed around the nursing units.

The focus group was facilitated by a doctorally prepared researcher with experience in conducting nurse focus groups to explore the viewpoints and perspectives of nurses who used the PPET13 in practice (Krueger & Casey, 2014). No demographic data about the nurses were collected to ensure nurse comfort with sharing their true experience. Following an introduction to the study aims and purpose, focus groups began with “Tell me a little about your experience using the PPET13 with patients.” Follow-up questions were asked to examine facilitators and barriers to nurse utilization of the PPET13 and recommendations for future use. The focus group lasted 1 hour. The researcher summarized main ideas and themes at the end of the focus group and asked participants if they had anything further to add or clarify. The focus group was recorded in its entirety, transcribed verbatim, and checked for accuracy.

## Data Analysis

Psychometric properties of the new PPET13 and PEES were evaluated prior to inclusion of their data in further analysis. CFA using a congeneric measurement model was conducted using Mplus 8.5. Reliability was subsequently assessed for the entire instruments and each factor using coefficient alpha and McDonald’s (1999) omega coefficient (the proportion of variance in instrument scores accounted for by its factors). Missing data were examined to determine if it was missing complete at random or missing at random.

Factor scores (PPET13) and total scale scores (PPET13 and PEES) were calculated by summing item scores. Independent-samples *t* tests and chi-square analyses were conducted to evaluate covariate balance across patients in Phase 1 and Phase 2 with respect to gender, race, marital status, self-rated health, readmissions and ED visits within 30 days, age, years of education, length of stay, Elixhauser comorbidity index, and total number of comorbidities. To adjust for multiple comparisons, we used false discovery rate, a procedure proposed by Benjamini and Hockberg (1995) to provide the multiple testing adjustment.

To examine the difference in patient experience of engagement between Phase 1 and Phase 2 patients, average PEES scores were contrasted between the Phase 1 and Phase 2 groups through multiple regression, adjusting for covariates (self-rated health, years of education, age, gender, minority status [White, yes/no], chronic illness load). The covariates of length of stay, nursing unit, and whether patients participated more than once in the study were added to this analysis because repeat admissions may have affected patients’ experiences. Logistic regression models were computed using the above covariates and average PEES score to determine if the model significantly predicted 30-day readmissions and ED visits. The effect of Phase 1/Phase 2 groups on the probability of 30-day readmissions and ED usage, as explained by PEES, was modeled using propensity-weighted, logit structural equation models. Propensity weighting was used to balance covariates in the model (McCaffrey et al., 2004).

Lastly, the relationship of Phase 2 patient characteristics (self-rated health, years of education, age, gender, minority status [White, yes/no], and chronic illness load) to each factor score of the PPET13 was examined. A proportional odds model was used to assess covariate influence: The log odds parameters were converted to odds ratios.

Focus group data were analyzed using inductive content analysis to identify the nurse experience implementing the PPET13 in practice (Elo et al., 2014). Two researchers independently reviewed the transcripts, and preliminary ideas were written in interpretive notes. Notes were organized into codes, and both researchers reviewed and discussed the codes. Detailed codes were categorized into broader themes: facilitators and barriers to use, strategies nurses used to overcome the barriers, and recommendations for future implementation of the PPET13. Consensus was met through discussion.

# RESULTS

## Sample Description

A total of 488 patients were enrolled in the study: 220 patients in Phase 1 and 268 patients in Phase 2. After reviewing data and eliminating patients whose MRN had been recorded incorrectly and patients who did not complete discharge surveys, the final sample was 212 patients for Phase 1 and 189 patients for Phase 2. Eighteen patients participated in the study twice, as they were hospitalized two separate times during the study’s duration. Five nurses participated in a focus group discussing their experiences using the PPET13 in practice.

Demographic information for both groups can be found in Table 1. Over half of the patients were female (56.6% Phase 1, 59.3% Phase 2) and White (51.0% Phase 1, 56.1% Phase 2). Only 11.3% of patients in Phase 1 and 9.5% in Phase 2 rated their health as very good or excellent. The average length of stay for both groups was 6 days. Patients in this study had a high disease burden, with a mean of four comorbidities. Patient factors were not significantly different across the two groups.

## Validity and Reliability of PPET13 and PEES

Missing data in the respondent sample was 2% for the PPET13 and less than 1% for the PEES. Little’s (1988) missing complete at random test indicated that the missing data from the PPET13 was missing at random and missing completely at random for the PEES. Multiple imputations for both scales were conducted using imputation by chained equations (Royston & White, 2011).

Results for CFA of the PPET13 scale, supported a six-factor congeneric measurement model. Although a significant chi-square did not provide support of fit, the χ2/*df* ratio of 2.33, the measures of confirmatory factor index of >0.975, and the Tucker–Lewis index of >0.960 indicated the model fit the data well. Given the few items in the PEES, a one-factor congeneric model was accepted: χ2/*df* ratio of 6.26, confirmatory factor index of 0.972, and Tucker–Lewis index of 0.960. Cronbach alpha scores for PPET13 was .85 for the total scale, and factors ranged from .47 to .80. McDonald’s omega coefficients for factors, ranging between .71 and .89, indicated a truer assessment of internal consistency reliability given the congeneric model fit and low number of items per factor (Graham, 2006). McDonald’s omega for the PEES was .92; Cronbach alpha coefficient was .86.

## Implementation of PPET13 on Patient Outcomes (PEES, Readmissions/ED Visits)

Patients’ mean scores for each of the individual items of the PEES can be found in Table 2. The largest increases in mean scores between the preimplementation and implementation groups occurred for items regarding electronic resources/EHR, being asked how they would like to participate, and participated as much as they would have liked. After controlling for patient-related covariates (self-rated health, years of education, age, comorbidity index, gender, minority status, nursing unit, length of stay, and repeat patient), PEES total mean score improved from preimplementation (*M* = 3.92) to postimplementation (*M* = 4.35, *t* = 5.24, *p* < .001 [.271, .597]).

TABLE 2 - Patient Demographics

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Preimplementation Phase 1 group (*n* = 212)** | **Implementation Phase 2 group (*n* = 189)** | **Raw** | **False discovery rate** |
|  | ***n* (%)** | ***n* (%)** | ***p*** | ***p*** |
| Gender |  |  |  |  |
| Male | 92 (43.4) | 77 (40.7) | .59 | .76 |
| Female | 120 (56.6) | 112 (59.3) |  |  |
| Race |  |  |  |  |
| African American | 93 (44.3) | 73 (38.6) | .58 | .76 |
| Asian | 3 (1.4) | 6 (3.2) |  |  |
| White | 107 (51.0) | 106 (56.1) |  |  |
| Hispanic | 5 (2.4) | 3 (1.6) |  |  |
| Other | 2 (1.0) | 1 (0.5) |  |  |
| Marital status |  |  |  |  |
| Married | 63 (29.7) | 61 (32.3) | .61 | .76 |
| Single | 86 (40.6) | 71 (37.6) |  |  |
| Separated | 4 (1.9) | 3 (1.6) |  |  |
| Divorced | 30 (14.2) | 20 (10.6) |  |  |
| Widowed | 29 (13.7) | 34 (18.0) |  |  |
| Self-rated health |  |  |  |  |
| Excellent | 4 (1.9) | 5 (2.6) | .10 | .20 |
| Very good | 20 (9.4) | 13 (6.9) |  |  |
| Good | 52 (24.5) | 64 (33.9) |  |  |
| Fair | 91 (42.9) | 82 (43.4) |  |  |
| Poor | 45 (21.2) | 25 (13.2) |  |  |
| Readmitted within 30 days of discharge |  |  |  |  |
| Yes | 40 (18.9) | 41 (21.7) | .48 | .76 |
| No | 172 (81.1) | 148 (78.3) |  |  |
| Emergency department visit within 30 days of discharge |  |  |  |  |
| Yes | 30 (14.2) | 28 (14.8) | .85 | .85 |
| No | 182 (85.8) | 161 (85.2) |  |  |
|  | ***M* (*SD*)** | ***M* (*SD*)** |  |  |
| Age | 58.3 (18.6) | 59.0 (19.9) | .58 | .76 |
| Years of education including kindergarten | 13.5 (3.0) | 13.4 (2.6) | .74 | .81 |
| Length of stay | 6.2 (5.8) | 5.9 (6.6) | .72 | .81 |
| Elixhauser comorbidity index | 26.1 (18.6) | 25.9 (19.9) | .77 | .81 |
| Total comorbidities | 4.3 (2.5) | 4.1 (2.4) | .30 | .54 |

While controlling for patient-related covariates (self-rated health, years of education, age, comorbidity index, gender, minority status, nursing unit, length of stay, and repeat patient), the patient’s PEES score was a significant predictor of ED visits (odds ratio [*OR*] = 0.69, [.50, .93]) but not 30-day readmissions (*OR* = 1.07, [.78, 1.47]). Mediational analysis assessing the relationship of implementation (pre/post) groups and ED visits as mediated by PEES demonstrated a significant indirect effect of −0.04 (0.02), *OR* = 0.96, [.91, .99]; meaning that an ED visit was 4.3% less likely in the postimplementation group patients.

## Implementation of PPET13—Nurses’ Experiences

Nurses agreed that although it was worthwhile to ask patients the items on the PPET13 and patient responses provided them with useful information, it was not always easy to get patients to complete the items upon admission. Nurses reported that patients are already asked many questions on admission and may also be tired, in pain, or distressed, so adding an assessment on admission is taxing not only to the patient but also to the nurse. Completion of the PPET13 was better received when administered the morning following the admission. The recommendation was made for nurses to become comfortable with the items on the PPET13, so nurses could fluidly talk about the topics with patients throughout their stay.

Nurses expressed uncertainty about how to specifically tailor their care to respect patient preferences reported on the PPET13. Nurses admitted to sharing information regarding treatments, medications, or vital signs even if the patient reported they were not interested in them. Nurses were also unsure if other providers who cared for their patients took the time to review the PPET13 displayed in the room. A suggestion was made to integrate discussion about the PPET13 into bedside nurse-to-nurse report and integrate patient preferences into the electronic record to facilitate communication about patient preferences for engagement beyond the initial nurse who completed the PPET13 with the patient. The nurses did not routinely discuss their patients’ PPET13 responses every time they gave a report. Nurses also felt that they could better utilize the whiteboards in the patients’ rooms as a mechanism to engage them in their care beyond their current use for communicating daily schedules and provider names. For instance, they could put patient questions or goals on the board. Another idea discussed was permanently putting the areas of engagement targeted in the PPET13 on the whiteboard, so that patient preferences could be recorded right on the whiteboard as a kind of checklist.

The nurses reported that patients who completed the PPET13 were more likely to ask about their EHR during their stay. Nurses conversed with patients about the use of their EHR following discharge; for example, how to access health information and/or send questions to providers. One barrier identified by the nurses, was that the healthcare system did not have patient handouts explaining components of the EHR beyond basic log-in information.

## Predictors of PPET13 Factor Scores

The average scores for each of the six factors are found in Table 2. Patients reported lower preferences for engaging in their care in the areas of self-advocacy, family involvement, active participation, and electronic resources/EHR. The highest preferences were reported for areas of information gathering and informed decision-making.

Odds ratios and *p* values of the covariate analysis of PPET13 factor scores can be found in Table 3. There were no significant predictors of the information gathering factor score, although self-rated health neared significance (*p* = .06). Individuals who self-rated their health as excellent were 1.6 times more likely to report a high preference for information-gathering items than those who did not. Increasing years of education and lower age were significant predictors of higher self-advocacy factor scores. For every 5-year increase in age, there was an 8.9% lower chance of the patient rating the self-advocacy items a “5” (*agree*). Each additional year of education made it 1.2 times more likely that the patient would rate an item a “5.” Self-rated health and female gender were significant predictors of informed decision-making preference scores. There were no significant predictors for engagement preferences related to family involvement or active participation. Patients who self-rated their health as excellent were 1.6 times more likely to rate their preferences for electronic resources/EHR higher than those who self-rated their health lower than excellent. In addition, for every 5-year increase in age, patients were 15.7% less likely to rate the electronic resources/EHR items a “5” (Table 4).

TABLE 3 - PPET13 and PEES Patient Scores

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Preimplementation Group 1 (*n* = 212) *M* (*SD*)** | **Postimplementation Group 2 (*n* = 189) *M* (*SD*)** | **Raw *p*** | **False discovery rate *p*** |
| PPET13 IG total |  | 9.4 (1.3) |  |  |
| PPET13 SA total |  | 9.0 (1.6) |  |  |
| PPET13 IDM total |  | 9.5 (1.2) |  |  |
| PPET13 FI total |  | 9.1 (1.7) |  |  |
| PPET13 AP total (3 items) |  | 13.5 (2.2) |  |  |
| PPET13 RES total |  | 7.6 (3.0) | <.001\*\*\* | .002\*\* |
| PEES 1: Received info I needed | 4.3 (1.0) | 4.6 (0.7) | .005\*\* | .012 |
| PEES 2: Questions answered | 4.3 (1.0) | 4.5 (0.9) | <.001\*\*\* | .002\*\* |
| PEES 3: Given opportunities to make decisions | 4.1 (1.2) | 4.5 (1.0) | .007\*\* | .015\* |
| PEES 4: Family and friends involved | 4.2 (1.2) | 4.5 (1.0) | <.001\*\*\* | .002\*\* |
| PEES 5: Given opportunities to talk with providers | 4.2 (1.2) | 4.6 (0.9) | <.001\*\*\* | .002\*\* |
| PEES 6: Told about accessing electronic health record/electronic resources | 3.1 (1.7) | 3.7 (1.6) | <.001\*\*\* | .002\*\* |
| PEES 7: Asked how I would like to participate | 3.4 (1.5) | 4.0 (1.4) | <.001\*\*\* | .002\*\* |
| PEES 8: Participated in my care as much as I would have liked | 3.9 (1.4) | 4.5 (1.0) | <.001\*\*\* | .002\*\* |
| PEES total | 3.9 (0.1) | 4.4 (0.1) | <.001\*\*\* | .002\*\* |

*Note.* PPET13 = Patient Preferences for Engagement Tool 13-Item Short Form; PEES = Patient Experience of Engagement Survey; IG = information gathering; SA = self-advocacy; IDM = informed decision-making; FI = family involvement; AP = active participation; RES = electronic resources.

\**p* < .05.

\*\**p* < .01.

\*\*\**p* < .001.

TABLE 4 - Predictors of PPET13 Factor Scores

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **PPET13 factor** |  |  |  |  |  |  |  |  |  |  |  |
|  | **Information gathering** |  | **Self-advocacy** |  | **Informed decision-making** |  | **Family involvement** |  | **Active participation** |  | **Electronic resources)** |  |
|  | ***OR*** | ***p*** | ***OR*** | ***p*** | ***OR*** | ***p*** | ***OR*** | ***p*** | ***OR*** | ***p*** | ***OR*** | ***p*** |
| Self-rated health | 1.63 | .06 | 1.45 | .08 | 1.87 | .03\* | 1.32 | .20 | 1.15 | .46 | 1.57 | .02\* |
| Years of education | 1.02 | .78 | 1.19 | .04 \* | 1.18 | .13 | 0.97 | .63 | 1.03 | .64 | 1.12 | .09 |
| Age | 1.00 | .89 | 0.98 | .05 | 0.99 | .21 | 0.99 | .39 | 1.00 | 1.00 | 0.97 | <.001\*\*\* |
| Comorbidity index | 1.00 | .88 | 1.01 | .61 | 1.00 | .70 | 0.99 | .22 | 0.99 | .38 | 1.00 | .68 |
| Female gender | 1.64 | .23 | 1.58 | .20 | 4.00 | <.01\*\* | 1.29 | .49 | 1.30 | .41 | 1.82 | .06 |
| White (yes/no) | 1.08 | .87 | 0.88 | .73 | 1.56 | .38 | 1.20 | .67 | 1.03 | .92 | 0.76 | .42 |

*Note.* PPET13 = Patient Preferences for Engagement Tool 13-Item Short Form.

\**p* < .05.

\*\**p* < .01.

\*\*\**p* < .001.

# DISCUSSION

The use of the PPET13 was associated with an improvement in patient-reported experience of engagement, as measured with the PEES. Although all the mean differences in the PEES items improved from Phase 1 to Phase 2, the greatest differences were found in the more general items asking patients (a) how they would like to engage in their care and (b) if they engaged in their care as much as they would have liked. When examining the specific PEES items pertaining to the different factors of the PPET13, it appears that even though nurses were not directed in a formalized intervention to incorporate patient preferences from the PPET13 into their care, patients in the implementation group reported a more positive experience engaging in their care.

This study demonstrated an indirect effect between use of the PPET13 and fewer ED visits, but not readmissions through the improvement in patient experience scores on the PEES. Patients in the implementation group may have had greater opportunities to engage in their planning and ask questions and, therefore, did not frequent the ED as often as preimplementation patients did. ED visits can be related to unmet needs, lack of information about health, or anxiety concerning health or treatment (Schmiedhofer et al., 2016). Patients may have been given more opportunities to speak up and collaborate with the team, creating discharge plans that were more mutually agreed upon and based on actual patient needs with targeted resources. Prior studies (Cronin et al., 2019) have shown an association between levels of activation (a measure of how active one is in maintaining and improving one’s health) and decreased ED visits and readmissions. Future studies should examine the effect of integrating patient PPET13 scores into formalized engagement interventions on 30-day readmissions, especially in patients with multiple comorbidities who may be more likely to utilize healthcare resources following discharge.

The highest engagement preferences were reported for areas of information gathering and informed decision-making. This is consistent with how healthcare engagement is viewed by both providers and patients (Coulter & Ellins, 2007; Tobiano et al., 2020). It is important to educate providers about strategies they could use to meet patient preferences reported on the PPET13, such as (a) communicating examination findings and diagnostic results in a timely fashion, (b) creating a welcoming environment for patients to speak up about concerns, (c) providing numerous opportunities for decision-making and mutual goal setting, (d) involving families in discussions about care, (e) providing more hands-on opportunities to care for oneself, and (f) facilitating access to resources beyond printed materials. To strengthen intervention development, both nurses and patients should be involved in the process (AHRQ, 2019; Bombard et al., 2018). Engaging both patients and nurses in the design of interventional research moves engagement initiatives to a higher level of engagement, can change culture within organizations, neutralizes power, and fosters mutual learning (Bombard et al., 2018).

While having a conversation about preferences was associated with increased patient experience scores and fewer ED visits, the effect on patient outcomes could be strengthened if nurses were educated on how to tailor nursing care to patient preferences. Nurses in the focus group discussed the struggles they had determining what to do with the PPET13 information once collected or how to ensure communication about preferences to other care team members. Future research should examine the process of integrating patient preference tools, such as the PPET13, into the EHR to streamline the process and facilitate communication about patient preferences across disciplines. Discussion about patient engagement preferences should become part of everyday practice for nurses. Given that engagement preferences are not static but rather situational (Samra et al., 2015), it is important that nurses continually gauge patient preferences for engagement throughout the hospital stay.

This study provided evidence for the validity and reliability of the PPET13. Patient characteristics such as age, education level, self-rated health, and gender were found to be significant predictors of some but not all factors of the PPET13. This finding stresses the importance of not making assumptions about how patients might want to engage based on their background (Tzelepis et al., 2015). For example, although younger age was found to be significantly associated with a higher preference for self-advocacy behaviors and utilizing electronic resources including one’s EHR, it was not associated with preferences for information gathering, informed decision-making, family involvement, or active participation.

Older patients, who often have multiple comorbidities and complex care needs, may not be given the same engagement opportunities as younger patients whose health is perceived to be “better” (Blaum et al., 2018). Care preferences are often not assessed and remain unmet in older patients who have multiple comorbidities (Tinetti et al., 2016). Nurses must be educated on how to best engage older, more complex patients in their care, so that frequent barriers to their engagement such as cognitive impairments, physical impairments, or lack of confidence can be minimized (Lilleheie et al., 2019). Older patients with multiple comorbidities may benefit from engaging behaviors that bring awareness to their inherent right to engage and speak up, help them understand their treatments and underlying pathologies in simple terms, teach self-managing behaviors, and respect families’ efforts for advocacy (Boyd et al., 2014).

## Strengths and Limitations

This study took a pragmatic approach, evaluating the inclusion of PPET13 assessment within real-time practice, with effectiveness measured as change in patient outcomes. Data were entered into an electronic database for linking with other EHR data, supporting future efforts to integrate the tool into the EHR. Findings from this mixed methods design will support future development and implementation of an intervention to accompany patient preference assessment. The validity and reliability of the PPET13 was established using a range of adult patients with medical-surgical conditions: Many prior preference instruments are disease specific or were tested in homogenous samples (Jerofke-Owen et al., 2020). The focus group allowed for active interaction among nurses to explore their views and opinions and provided researchers insight into nursing behaviors and motivations to use the tool. The inclusion of nurses’ perspectives on implementation will facilitate adjustments to implementation to meet local practice needs and improve future adherence to assessing patient preferences for engagement.

There are also limitations in this study. The survey was not integrated into the EHR, and therefore, a hard copy needed to be displayed in a high-visibility area. Although many nurses reported that they discussed patient preferences during change of shift, we cannot guarantee that communication about preferences was a universal practice or that other providers caring for the patient took the time to review the PPET13 on the patient’s whiteboard. In addition, this study demonstrated the result of implementing the structured assessment of patient preferences for engagement, but not the intervening mechanism (processes) that contributed to the outcomes. Future research should focus on the effect of tailoring nursing care (processes) to patient preferences reported using the PPET13 on patient outcomes.

The PPET13 has only been tested in English, limiting immediate applicability to English-speaking patients. Care should be taken to use appropriate methods for translation and cultural adaptation (Human Services Research Institute, 2005). Future studies should include evaluation of validity and reliability of the instrument when translated to other languages, as patients’ cultural beliefs and values can influence engagement preferences (Hawley & Morris, 2017). Although both instruments were written at or below a Grade 8 level, the patient’s reading proficiency level could have influenced patient comprehension of items.

Lastly, only 30-day readmission and ED visits that happened within the healthcare system were able to be extracted from the data warehouse. We did not communicate with patients after discharge to determine if they sought care outside the healthcare system following their discharge. It is possible that some healthcare utilization was not captured through our chart review if the patient sought care outside the healthcare system.

## Conclusion

The implementation of the PPET13 in practice was associated with improvements in patient experience of engagement, which was then associated with a decreased ED use within 30 days of discharge. Use of a patient engagement preference tool, such as the PPET13, can help to inform the delivery of individualized engagement strategies to improve patient and family engagement and outcomes, particularly with patients who have substantial encounters with the healthcare system, such as those with complex chronic diseases. Future research efforts should involve families and providers in the development of engagement interventions to ensure feasibility and acceptability. Lastly, strategies to integrate patient engagement preference tools into the EHR to facilitate communication about preferences should be examined.

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