



Testing of the Patients' Insights and Views of Teamwork (PIVOT) Survey: A validity study



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ABSTRACT

Objective: To explore patient observations of teamwork-related behaviors such as inter-team communication through a newly designed survey.

Methods: In this cross-sectional study, 101 patients ($N = 86$) and caregivers ($N = 15$) recruited from the emergency department (ED) of an urban, academic medical center ($>85,000$ visits/year) completed the 16-item Patients' Insights and Views Observing Teams (PIVOT) Survey. We evaluated validity evidence through descriptive statistics and analysis including a Many-facet Rasch model to determine associations between questionnaire items and sociodemographic characteristics.

Results: Participant responses provided evidence survey items performed well and reflected patients' awareness of team behaviors such as inter-team communication, coordination, and keeping teammates informed. Also, participants responded about the consistency of information from team members and knowing what people's jobs were on the team. Rasch analysis largely supported that the PIVOT items reflected the intended content area and adequacy of ratings scales supporting evidence of response processes. High internal consistency (Cronbach alpha, $r = .87$) supported evidence of internal structure. As expected, response patterns differed by ED visit acuity level and length of stay.

Conclusions: The PIVOT survey offered a means to collect patient and caregiver observations of health care teams.

Practice implications: PIVOT survey responses may contribute to evaluation of teamwork behaviors.

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1. Introduction

Patient surveys are frequently used in clinical settings as assessment measures to solicit patients' feedback about their care and their care providers' communication. Examples include the Communication Assessment Tool (CAT) of physician interpersonal skills and communication with patients; the Picker Patient Experience Questionnaire for hospital patients and their families

on quality of care issues such as coordination, continuity, and communication; and the Patient Perception Scale of maternal satisfaction with communication, safety and respect after operative delivery [1–3]. These and other surveys are used not only in research, but also in practice as patient input and engagement has the potential to improve systems of care and outcomes [4,5].

Although patient satisfaction survey results have been positively associated with quality indices and care process, evidence of the impact of patient surveys on systems improvement is limited [6,7]. In part, this may be due to surveys that address an expansive range of items across a variety of constructs and populations. For instance, the commonly-used Press-Ganey[®] survey collects data on patient satisfaction with communication, care providers, and the care environment from samples of discharged patients.

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Keeping in mind the limitation in survey design of having too broad a scope of topics, we focused on the single construct of teamwork and sought to investigate this through the perspective of the patient. This topic is of interest because improving clinical teamwork has been named as a priority area for improving the safety and quality of health care [8–10]. Also, while teams have been assessed by trained observers or team member self-report [11–13], research suggests patients may be aware of and able to assess teamwork-related behaviors [14–17]. Whereas patients have most often been asked only about provider–patient communication, we propose that patients' perception of teamwork may be useful to improvement efforts and may relate to their satisfaction with care experiences [14,16,17].

Our research objective has been to evaluate the validity of a survey tool used to assess teamwork from the perspective of the patient. Over the past two years, our research team engaged patient advocates, physicians, nurses, experts in healthcare communication and patients themselves in a multidimensional project to develop a survey tool aimed at assessing patient perceptions of teamwork. In the first stage, we sought to determine whether or not patients could report observations of health care teams in a manner distinct from their own care experience and treatment [18]. The results of interviews with experts and patients/caregiver supported initial item generation to determine item importance. Secondly, we conducted a web-based survey of health care providers and patient advocates to focus survey items for usefulness with team improvement efforts and finally determined wording for items and the response scale through three rounds of cognitive interviews with Emergency Department (ED) patients and caregivers [19]. The result of this prior work is an instrument called the Patients' Insights and Views Observing Teamwork (PIVOT) Survey. This 16-item survey is intended to allow the patient to provide feedback regarding their observations of team interactions and coordination. In this stage, we present validity evidence of the responses on the PIVOT survey from a sample of ED patients.

2. Methods

2.1. Study design

We conducted a preliminary validation study with the 16-item Patients' Insights and Views Observing Teams (PIVOT) survey in the ED. The ED was chosen as the setting for the study because all patients are exposed to a team of healthcare providers. All study procedures were reviewed by the university IRB and determined to be exempt. Participants indicated their informed consent by completion of the survey.

The study continued for six weeks from June 2012 to August 2012. Participants were recruited from the ED at an urban, academic medical center (>85,000 annual visits). Two to three days per week, research assistants (RA) scheduled a 60–120 min period to collect data. For this time period, RAs tracked the volume of ED patients and subsequent increase in discharge orders through monitoring of the electronic record. Once patients were confirmed ready for discharge one of the four research assistants (RAs) approached patients and family caregivers for study recruitment. The RAs explained the purpose of the study and asked for volunteers to privately complete the PIVOT survey about their experience in the ED. At the midpoint of the data collection period, the research team reviewed the preliminary results and the procedures with the RAs. Though refusals were minimal, data collection processes were refined to: maximize recruitment opportunities during peak patient discharge periods; reassure participants that survey responses were not shared with ED staff; and to track refusals. RAs were available on rotating schedules

covering weekdays and on-site 27 times for a total of 36 h over the study period. The available hours were in the morning, afternoon and early evening and patients recruited represent a convenience sample.

2.2. Survey

The survey consisted of 19 items related to the ED experience. The first 16 items were the Patients' Insights and Views Observing Teams (PIVOT) Survey instrument, developed through an iterative process and reported previously [18,19]. Participants selected survey response options using a 5-point frequency scale, anchored as 1 (not at all), 2 (rarely), 3 (sometimes), 4 (often), and 5 (all the time), or an added "no opportunity to observe" option. Next followed the 3-item Patient Perception Scale (PPS); also rated on a 5-point scale [3]. The third section consisted of an additional six items to capture demographic information, including participants' self-reported health, role in the clinical encounter (patient or care provider), sex, age, ethnicity, and educational achievement. Also, the RAs acquired patient data from the electronic patient chart system on length of stay (LOS) and triage acuity level based on the Emergency Severity Index (ESI; Levels 1–5).

Prior to analyses, ratings for four negatively worded PIVOT items: item 5 (I felt as if team members talked in front of me as if I wasn't there); item 6 (I felt that team members told me conflicting things); item 9 (I saw team members treating each other with a lack of respect); and item 10 (I heard arguments between team members, inside or outside the room) were reverse coded to align with the direction of the remaining 12 positively-worded items.

2.3. Measurement and analyses

We evaluated validity evidence relevant to (1) test content, (2) response processes, (3) internal structure, and (4) relationships to other variables [20,21]. Participant ratings were analyzed using the Facets software v. 3.68.2 (MESA Press, Chicago, IL, 2011), using an eight-facet (participant \times health status \times role \times gender \times education \times acuity \times length of stay \times item) Rasch model.

We selected a Rasch model as they have been commonly-used to analyze rating scale data, and have demonstrated their value in studies that evaluated psychometric properties of faculty measures [22,23] and patient ratings [1]. Rasch models, which fall within the family of modern measurement models called item response theory (IRT) [24,25], provide several improvements in scaling items and people when compared to traditional methods based on classical test theory (CTT). For example, the Rasch model transforms both participants' ability and items' difficulty on the same metric, so person ability and item difficulty can be meaningfully compared. This shared scale also allows researchers to examine potential effects across item, person, and/or facet (e.g. how specific items, participants, or participants from specific groups performed). In addition, unlike those defined in CTT, Rasch model parameters are not sample- or test-dependent. This provides significantly greater flexibility in situations where different samples are used, such as in validation studies. Finally, the Rasch models offer a built-in quality control measure that can be used to gauge precision of measures via item-level standard error of measures (SEM), a function that is particularly important in studies that make inferences about relatively small sample [26]. A more complete description of Rasch measurement models can be found in Hambleton et al. [27].

2.3.1. Validity testing

A preview of the analyses we conducted to evaluate sources of validity evidence with supporting references is provided below.

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