


Using Laddering Interviews and Hierarchical Value Mapping to Gain Insights Into Improving Patient Experience in the Hospital: A Systematic Literature Review

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Abstract

Hospitals are continuously facing pressures to mitigate the gap between patient's expectations and the quality of services provided. Now with Medicare reimbursements tied to Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores, institutions are attempting interventions to increase satisfaction scores. However, a standard framework to understand patient values and perceptions and subsequently translate it into reliable measures of patient satisfaction does not exist, particularly in the inpatient settings. This article highlights opportunity for the addition of qualitative customer value research to augment the information providers gain from HCAHPS scores and provide additional indicators that can be used in improving the patient experience. In this article, patient laddering interviews and hierarchical value mapping are reviewed as methodologies to understand patient core satisfaction values during their hospital stay. A systematic literature search was performed to identify articles addressing laddering interviews and hierarchical value mapping as applied to health care. Inclusion criteria involved studies relating to health care and using laddering interviews. Exclusion criteria included non-health-care studies. Only 3 studies were found eligible for this review. Our systematic review of literature revealed only few studies which may help to guide us to improve patient experience using laddering interviews. These interviews can help compose a personalized bedside survey which may be more meaningful than current widely used HCAHPS survey.

Keywords

HCAHPS, patient satisfaction, hierarchical value mapping, laddering interviews, marketing, patient perspectives/narratives, means-end theory

Introduction

Patient Experience Versus Patient Satisfaction

The term *patient experience* has been used in lieu of patient satisfaction but without being understood well in health care. According to The Beryl Institute, a global leader in improving health care patient experience, it is defined as “the sum of all interactions, shaped by an organization's culture, that influence patient perceptions across the continuum of care (1).” As per Agency for Healthcare Research and Quality (AHRQ), patient experience is assessed by eliciting patient's perspective on how something should happen in health care; whereas, patient satisfaction is a summary of patient's expectations about a health care encounter and whether they were met. Two patients receiving similar care may have

different satisfaction levels due to different subjective expectations (2). To understand how to effectively measure patient experience, one should be familiar with pros and cons of Hospital Consumer Assessment of Healthcare Providers

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and Systems (HCAHPS) survey, a predominant survey used in the United States.

Review of HCAHPS Survey

In health care, HCAHPS is the dominant survey used to capture patient experience during patients' hospital stay. The HCAHPS survey is a national, standardized and the most widely used survey among health-care systems. The Centers of Medicare and Medicaid Services (CMS) and AHRQ piloted the survey in 2002 and was launched in 2006. In May 2005, the National Quality Forum endorsed HCAHPS. Then, in December 2005, the Federal Office of Management and Budget gave its final approval for the survey to be implemented nationally (3).

The HCAHPS survey is administered in a random sample of hospital inpatients 48 hours to 6 weeks after discharge. A minimum of 300 eligible surveys must be submitted by the hospital for each reporting period (4). It is also offered in multiple languages, by phone or mail. There are total of 21 core questions covering 7 composites (communication with doctors, communication with nurses, responsiveness of hospital staff, pain management, communication about medications, cleanliness of hospital, and quietness at night of hospital). Other miscellaneous composites include discharge information (no to yes), willingness to recommend (definitely no to definitely yes), and overall hospital rating (0 to 10 rating scale) (4). Unfortunately, there are several limitations in HCAHPS survey design and its use as a driver for quality improvement projects in the inpatient settings. The HCAHPS survey is routinely sent out to patients after discharge and faces challenges of low response rates (5). Survey response rate can be important determinant of the validity of survey results with greater than 70% often desirable (6); however, response rates have historically been low at 32.8% and strategies to increase response rates have been suggested (7). McFarland et al analyzed HCAHPS survey data from 934 800 patient respondents who were seen at 3907 hospitals across the country, representing more than 95% of the nation's hospitals. They studied demographic and structural factors (hospital beds) and concluded that hospital size and primary language (non-English speaking) most strongly predicted unfavorable HCAHPS scores (8). Siddiqui et al studied specialty hospitals and general medical hospitals (GMH) and found specialty hospitals having significant higher overall HCAHPS patient satisfaction score than GMHs, although more than half of this difference disappears when adjusted for survey response rate. They suggested that comparisons among health-care organizations should take into account survey response rates (7). Another drawback, HCAHPS surveys do not provide real-time feedback to house staff, physicians, nurses, or administrators on how they can improve patient care prior to discharge. The standardized survey does not ask patients about other important factors affecting their hospital experience, for example access to information and overall comfort of the

environment. Yet another limitation of the HCAHPS survey is lacking retrospective analysis of which provider was involved in low scores for a specific survey section, hence formulating targeted quality improvement projects next to impossible. Another limitation of HCAHPS survey is its delayed administration. The survey is sent out 48 hours to 6 weeks after patients leave the hospital, with results reaching back to hospital well after patient care has ended. This renders any quality improvement efforts futile while the patient is still admitted to the hospital. Measuring responses in real-time can not only identify pitfalls but also drive interventions while inpatient. For example, hospitalist nurse can round on patients in the afternoon rather than having patients mail in surveys with comments after they have discharged. Other limitations stem from HCAHPS' basis as a customer satisfaction survey. Satisfaction surveys by nature focus on gathering a quantitative evaluation by the customer of past actions. Even when using advanced statistical analysis techniques, satisfaction surveys do not, and are not intended to, provide a deep understanding of why certain assessments take place or what alternatives might change those assessments in the future (9). Thus, a more robust marketing research methodology beyond HCAHPS is required which takes into consideration our regional patient population segment.

Consumer Values and Means-End Theory

From a business perspective, *customer value* is the customers' perception of what they want to have happen in a specific use situation, with the help of a service offering, in order to accomplish a desired purpose or goal (9). Often understanding *customer value* is easy but measuring it can be challenging. Means-end chain (MEC) theory facilitates the understanding of the consumer's expectations, choice, value, and how consumers link the attributes of products and services with particular consequences satisfying their personal values (10). Reynolds and Olson (2001) proposed a MEC approach focusing on consumers' knowledge in 3 key areas, product attributes, consequences, and values. Common application of the MEC approach has been in eliciting consumer motivations, and reasons for their choices (10). In marketing, frequently a hierarchical representation of customers' views of the service can be developed. It is represented on 3 levels by *attributes*, *consequences*, and *desired end-states* (11–13). At attributes level, the tangible service characteristics can include “*I get to see doctor on time*” and “*staff informed me of delays.*” Consequences are functional and physiological attractions like “*my doctor understands me*” and “*makes me feel better.*” At the highest level, desired end-states, are characterized by consumers' deep-seated values, like “*good health*” and “*trust in doctor.*” As one initiates a conversation about a service satisfaction, the interviewee will initially describe it frequently in terms of attributes. As the interviewer probes into asking why he or she likes that attribute, the conversation deepens and often

consequences and end-states surface. The hierarchy suggests a top-down approach to understand patient needs. This approach is successful as it focuses on future states and is more stable (9). In marketing analysis, there are predominantly 2 forms of customer value interviews, laddering technique and grand tour. We explain the laddering technique as below.

Laddering Interviews and Hierarchical Value Maps

Laddering is a moderately structured interviewing method that is designed specifically to understand means-end associations that customers have toward a service or product (14). It is like a peeling process, in which you start peeling the outer layers of an onion until you get to the core. This process can be tedious, time-consuming but the benefits it provides far outweigh the costs. Gengler et al has described it as “reasons behind the reasons” (13). Beginning one attribute at a time, the interviewer asks a series of probing questions to determine the relationship between the *attribute* and higher order *consequences* and *desired end-states* (aka A-C-E sequence). Probing is an essential aspect of laddering interviews and helps elicit higher value states. Interviewers are suggested to as “*how does that make you feel?*” to elicit these higher consequences and end-states (10). After collecting all the value dimensions from different laddering interviews, a *Hierarchical Value (HV) Map* is created. Reynolds and Gutman pointed out that when the sample size is between 30 and 50 the correlation may be discovered through HV map (11).

Returning to HCAHPS survey, we see that it is predominantly an attribute-level survey and does not seem to address higher value hierarchy states like consequences or end-states for patients. Health care is a unique service industry and one which is very personable. It distinguishes itself from others by the very nature that is it essential but not necessarily desired. Consumers choose health-care service when they are ill and often emotionally vulnerable. Another distinctive characteristic of health care is that patient is a co-creator of the services, and an accurate description of symptoms of illness is essential for delivery of health services (15). Laddering interviews can be used to peel that layer and find hidden patient values, leading to a delighted customer. An example is seen in de Ruyter et al study which found empathy as the most important attribute in health care (16). Our systematic review was meant to further study if these techniques have been used in health care to assess patient experience.

Methods

Search Strategy and Selection of Studies

Literature search strategy. We focused on the research question of use of hierarchical value map (HVM) or laddering interviews for understanding patient values. We used PubMed, Web of Science, and EBSCOhost to conduct our

Table 1. Inclusion and Exclusion Criteria for Literature Search.

Inclusion Criteria	Exclusion Criteria
Studies relating to health care	Did not directly address study of laddering interviews in health care
Directly using laddering interviews	Only abstracts
Both English and non-English literature	Non-health-care
Both published and unpublished literature	

Table 2. Article Search Results with Various Databases.

Search Term	Number of Results from Selected Database			
	PubMed	Web of Science	EBSCO (Business Source Premier)	Google Scholar
Hierarchical value mapping	107	1033	3	48
Laddering interviews	11	160	76	1250
Patient	6 786 257	5 854 667	265 168	5 660 000
HVM & patient	24	1	1	3
LI & patient	1	2	1	103
All three terms	0	1	1	1

Abbreviations: HVM, hierarchical value mapping; LI, laddering interviews (as of 27 December, 2019).

systematic literature search. Of note, we were not able to find any meta-analysis or systematic reviews based on our research question.

Study selection. Following inclusion and exclusion criteria were used to select our studies (Table 1). Non-English and unpublished studies were not excluded to broaden literature on this scarcely studied topic. The data collection results are summarized in Table 2.

Results

After performing a literature search (PubMed) of “hierarchical value mapping” and “patient,” 24 studies resulted. The PRISMA flow diagram is shown in Figure 1. In contrast, by using search term “laddering interviews” only excluding patient there were only 11 articles found. Literature search of Web of Science using “laddering interviews” revealed 160 articles whereas literature search of EBSCO Business Source Premier revealed 76 studies. A combined search of all the 3 terms on PubMed revealed zero studies. After applying exclusion criteria on PubMed articles only one study used laddering interviews for patient care (17) and that too not direct patient care but using laddering interviews to understand ideal medical doctor. Applying exclusion

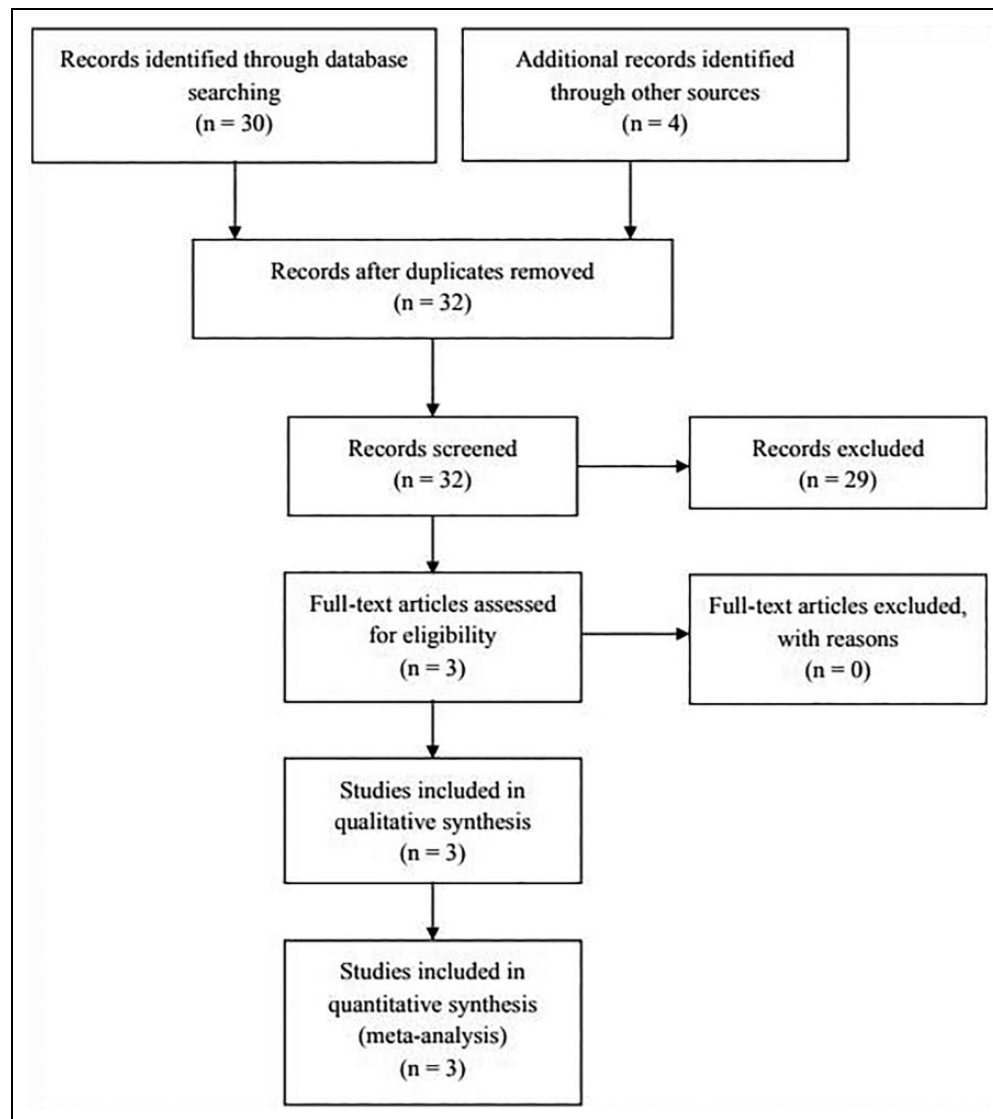


Figure 1. PRISMA flow diagram laddering interviews.

criteria on search of EBSCO Business Source Premier revealed one study employing laddering interviews to uncover desired qualities and behaviors of general practitioners (18). Exclusion criteria on search of Web of Science revealed a study by Lee and Lin which studied HVM modelling in the “healthcare service industry” in Taiwan (19). This study is the most comprehensive we found shedding light on consumer behaviors in the health-care industry. They interviewed consumers regarding motivations behind health-care choices and then developed a HVM. The 3 research studies are summarized in Table 3.

Discussion

Our study revealed only 3 studies exploring laddering interviews and HVMs in context of patient experience. Unfortunately, many of our selected studies had a small sample size

of respondents. Some studies suggest etiquette-based communication and sitting at bedside may improve patient experience (20,21). Recently, providing real-time deidentified patient satisfaction results with education and incentive system to residents may help as well (22,23). Indovina et al employed real-time daily patient feedback to providers coupled with provider coaching. They used 3 provider-specific questions taken from a survey that was available on the US Department of Health and Human Services website and was not obtained via laddering interview techniques. They developed a “daily survey” and found hospitalists who received real-time feedback had a trend toward higher proportion of top box HCAHPS scores and overall rating of hospital, but this was not statistically significant (23). The strategies in this study to improve patient experience were only hypothesized and a deep dive into patient experience and core values was never undertaken.

Table 3. Summary of Eligible Studies.

Study	Study Purpose	Time Frame	Study Design	Sample Size	Results	Relevant Findings
Miles et al (17)	Examine utility of laddering interview technique to investigate issues in medical education	April 2004- February 2005	Laddering technique interviews	Doctors (n = 30) Medical students (n = 31) Patients (n = 33)	Doctors: Mean number of years since qualifying was 23.13 ± 6.86 (range 8-34) Students: 12 (39%) male and 19 (61%) females, their mean age was 26.35 ± 8.07 (range 17-45) Patients: 14 (42%) males and 19 (58%) females. Mean age was 45.12 ± 19.31 years.	-Use of laddering resulted in data-rich results for all 3 stakeholder groups -All interviews were conducted by same researcher -All the characteristics identified by the patients revolved around “communication and interpersonal skills” attributes. -In conclusion, the laddering technique data can be used to develop an instrument to assess student attitudes toward professional behaviour in medical doctors.
Gruber (18)	Study qualities and behaviors of general practitioners that patients’ value.	Not mentioned, publication date April 2011	Exploratory research study using semistandardized qualitative laddering interviewing technique. Snowball sampling was performed.	20 respondents who had experienced a service recovery encounter with their GP while 18 respondents who had a normal encounter, for total of 38 respondents	Total of 375 ladders were collected from the laddering interviews and the 38 respondents provided between 5 and 26 ladders each, with an average of 9.9 ladders per respondent.	-Study conducted on Family Health Service division of National Health Service (NHS). -Objective to create attribute-consequence-value chains (A/CV) using means-end theory to develop a hierarchical value map. -Second objective to reveal benefits sought by patients in encounter. -Interviews lasted between 15 and 78 minutes. -Total of 375 ladders collected from interviews -LADDERMAP software used for analysis. Laddering provides researchers with research design unlocking means-end considerations otherwise hidden.

(continued)

Table 3. (continued)

Study	Study Purpose	Time Frame	Study Design	Sample Size	Results	Relevant Findings
Lee and Lin (19)	Study applies MEC analysis to model a health care consumer HVM to understand how consumers transform the service attributes into individual consumer's values.	Not mentioned, publication date February, 2011	Qualitative (means-end chain analysis) and quantitative research methods	Total of 700 questionnaires were delivered to patients and 504 completed, 72% response rate Based on survey results, 50 respondents were selected for interviews	Hierarchical value map was created with n = 21 valued "feel at ease", n = 18 valued "satisfaction" and n = 22 valued "convenient."	-Patients from 2 national university medical centers and 4 private regional hospitals in Taiwan. Each interview lasted approximately 50 minutes. -HVM constructed indicates respondents most often observe a sense of administrative procedures, time saving, and convenience.

Abbreviations: GP, general practitioners; HVM, hierarchical value map; MEC, means-end chain.

Value Proposition

With the push from volume to value-based reimbursement models, hospitals are now motivated more than ever to achieve improvements in specific HCAHPS domains (24). Based partly on these scores, hospitals can either forgo or gain up to 1.5% of their Medicare payments for the fiscal year (FY) 2015 increasing to tied amount of 2% of reimbursement dollars at risk in FY 2017 (25). Estimates predict that patient satisfaction will determine 30% of the incentive payments, while improved clinical outcomes will decide 70%. It is also known that overall higher patient satisfaction scores are associated with lower 30-day risk-standardized hospital readmission rates after adjusting for quality (26). Hence, patient satisfaction scores is linked to both direct penalties as well as indirect readmission penalties which have steadily increased from 1% in FY 2013, 2% in FY 2014, and 3% in FY 2015 onward with FY 2017 CMS estimate of total penalties being US\$528 million (27).

Since 1990s, hospitals have recognized that customer service and provider–patient interactions are prudent in pursuit of successful outcomes, and have emphasized the measurement and reporting of patient satisfaction measures (28). Improving patient satisfaction scores has an even larger impact at university-level by facilitating more funding for further research from institutions like Robert Wood Johnson Foundation, The Beryl Institute (*Patient Experience Grant Program*), and AHRQ to mention a few.

Conclusion

Based on our systematic review of literature, we suggest further exploring laddering interviews as a tool to understand patient's core values that drive optimal patient experience. A *personalized* bedside survey derived from laddering technique has the potential to target specific quality improvement projects, which may encompass physicians, advanced practice professionals, nursing, nursing assistant, dietary department, and department of patient experience. The impetus for this study comes from limitations of using only HCAHPS scores to make patient experience assessments, including poor response rates of HCAHPS scores and frustration on implementation of quality improvement projects in inpatient settings. We plan to conduct laddering interviews and construct HV maps to understand our patient population better in upcoming future study.

Limitations

Due to scant research in this field, as well as involvement of overlapping marketing and advertising concepts, there may be several business journals which may not be represented completely in our search protocol. Being able to link patient feedback to individual providers is a limitation of most health-care patient experience surveys which also affects laddering interviews.

Authors' Note

The views expressed in this article are of author's and not an official position of any of the affiliated institutions.

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