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Review

How do you measure trust in the health system? A systematic review of the literature

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ABSTRACT

People's trust in the health system plays a role in explaining one's access to and utilization of medical care, adherence to medications, continuity of care, and even self-reported health status. Yet it is not easy to find trust measures and understand what they are measuring. A systematic review of scales and indices identified 45 measures of trust within the health system with an average of 12 questions each, which quantified levels of trust among various relationships across the health system. Existing evidence was narrow in scope, where half examined the relationship between doctors/nurses and patients, and the majority were designed, tested and validated in the United States. We developed a health systems trust content area framework, where we identified that honesty, communication, confidence and competence were captured frequently in these measures, with less focus on concepts such as fidelity, system trust, confidentiality and fairness. Half of the measures employed a qualitative method in the design of these measures and 33% were pilot tested. Reporting of test–retest reliability and inter-rater reliability were less common. This review identifies a need to develop measurements of trust beyond doctor–patient relationships and outside of U.S. contexts, and strengthen the rigor of existing trust measures. Greater development and use of trust measures in the health system could improve monitoring and evaluation efforts, which may in turn result in better health outcomes.

Introduction

The concept of trust has always been regarded as ambiguous and fuzzy, and thus difficult to define and investigate. Yet trust plays an essential role in the health system where the entire arrangement is largely relational. Healthcare is delivered by people and for people, where interactions among patients, doctors, nurses, pharmacists, insurers, suppliers, regulators and other agents play a significant role in the health system. As Gilson notes, "trust is important to health systems because it underpins the co-operation throughout the system that is required for health production" (Gilson, 2003). Trust measures can be used by health workers, health program implementers and researchers to better monitor and evaluate people's trust towards building a trusted health system with better health outcomes.

Trust has been linked with a number of important healthcare objectives, that range from access, health-related behavior uptake, continuity and quality of care, and finally to self-reported health status. First and foremost, trust is associated with better access to and utilization of medical care (Russell, 2005) and is highly correlated with satisfaction with and loyalty to the physician (Safran et al., 1998). Trust increases the likelihood that patients recommend treatment to others and may affect the effectiveness of and adherence to treatment among patients (Hall, Zheng, et al., 2002). The quality of interaction, degree of disclosure, amount of autonomy in decision-making, continuity of care and level of engagement in behavioral change are all influenced by trusting patient–provider relationships. Finally, there is some evidence that suggest that trust is in fact associated with better self-reported health (Wang, Schlesinger, Wang, & Hsiao, 2009).

Trust is also important at the institutional level, as people's trust in hospitals, insurers and healthcare systems may affect their use of services and thus their economic and political viability (Rowe & Calnan, 2006). For instance, patients' trust in interpreters (Hsieh, Ju, & Kong, 2010), health insurers (Ozawa & Walker, 2009) and in the finances of the healthcare system (Smith, Stepan, Valdmanis, & Verheyen, 1997) can each affect the healthcare experience. Trust within a health system may also be influenced by professional norms and power dynamics between nurses, doctors and others in a healthcare organization and may shape attitudes and practices towards patients (Gilbert, 2005). Trust also plays a critical role in

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public–private health partnerships (Jones & Barry, 2011), as it manages the problem of information asymmetry and diminishes the transaction costs of large amounts of external monitoring (Bloom, Standing, & Lloyd, 2008). Having a trusting and trusted health system can then contribute to fostering wider social value and social order (Gilson, 2003).

Only in the past couple decades have researchers started measuring and analyzing trust within the health system. To date there is no systematic review of trust measures evaluating their quality. This paper attempts to fill that gap by asking the following research questions: How many trust measures are there? What relationships and populations do they study? What content areas do they capture? How rigorous are the measures?

Methods

We conducted a systematic literature search, in three major databases (PubMed, HaPI and PsycINFO), to identify scales and indices that have been developed to measure trust within the health system. The following search terms and their variants were applied: ('trust' OR 'mistrust' OR 'distrust') AND 'measure' AND ('scale' OR 'index'). Additional records were included by searching citations and dissertations. Our search was limited to English articles. Beyond having been published prior to April 2012 when the review was conducted, no restrictions were applied on the year of publication. Titles and abstracts were screened by two separate reviewers, where we applied inclusion and exclusion criteria. Full text articles were retrieved and reviewed by the same two reviewers for additional screening. The remaining records were abstracted for analysis.

This search focused specifically on developed scales and indices that measure trust, distrust or mistrust. We excluded conceptual pieces that discussed but did not quantify these concepts. Articles that developed a new scale or index, or revalidated an existing scale in a new population were included in the review. We also excluded articles that measured trust without a scale or index or developed a scale or index to measure a related concept such as social capital, of which trust was one of the components. The search focused only on measures within the health system. The reviewers engaged in a deliberative process to resolve any conflicts around article identification, screening and eligibility.

The analysis involved extracting both quantitative and qualitative information from the articles. We extracted data on authors, country, context and population, trust domains and dimensions, as well as reliability statistics, validity assessments, and the actual trust questions. In assessing dimensionality, we observed whether scales modeled a singular or multi-factorial construct to examine the specificity of measures (DeVellis, 2012). Where dimensions of the scale were not reported, we classified scales as unidimensional if there were few questions asked and if only one Cronbach's alpha was reported.

Based on the trust domains and questions that were extracted, we developed a framework to categorize the domains based on deliberative reconciliation of groupings. We classified all trust questions into eight content areas: fidelity, competence, honesty, confidentiality, confidence, communication, system trust, and fairness. These substantive content areas help condense information as well as specify and attribute meanings to the latent variable of trust (DeVellis, 2012). They represent different aspects of trust captured across measurements. Opposite sentiments of mistrust, distrust, suspicion, fear or lack of support overlap with these areas and are not analyzed separately. We also grouped the general constructs that were used to validate the trust measures in a similar deliberative fashion.

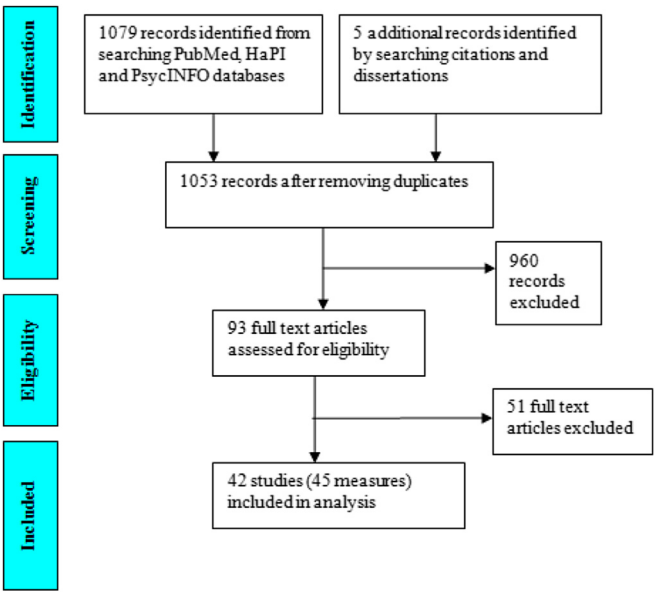

Fig. 1. Flow diagram of study selection.

Results

The overall search yielded a total of 1079 articles; 375 in PubMed, 68 in HaPI and 636 in PsycINFO. Five additional records were included from searching citations and dissertations. There were 26 duplicates identified between PubMed and PsycINFO and 2 additional duplicates with HaPI. Scanning the titles and abstracts of the remaining1053 records with eligibility criteria yielded 93 records. Upon screening the full text articles, 45 measures (43 scales and 2 indices) were retained and abstracted for analysis (Fig. 1). With the exception of one scale (Wallston, Wallston, & Gore, 1973), all measures were developed after 1990, with a majority (87%) published since 2000.

a. Relationships examined

Fig. 2 shows that about half of the trust measures look at the relationship between doctors/nurses and patients (n = 23, 51%). Out of these interpersonal relationships, the majority focused on the doctor–patient relationship (n = 19, 83%), two looked at nurse–patient interactions and two referred to both doctors and nurses interactions with patients. Other relationships captured include those between patients and the health system (n = 12, 27%), patients and insurers (n = 4, 9%), patients and pharmacists (n = 2, 4%),

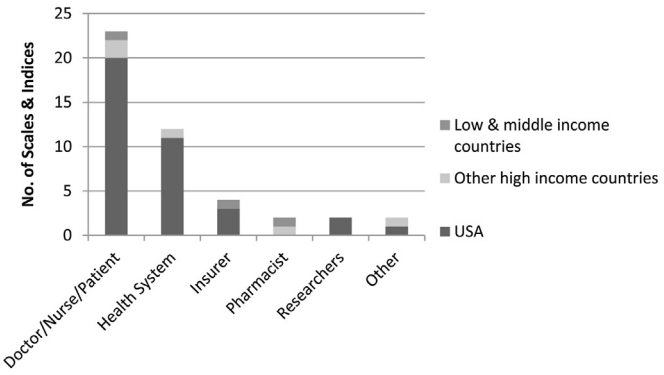

Fig. 2. Trust relationships measured by scales and indices.

participants and medical researchers ($n = 2$, 4%), and others such as partnerships and information technology ($n = 2$, 4%). Three of the scales (7%) focused on the perspective of health professionals rather than patients' perspective. One scale looked specifically at assessing trust and mistrust amongst those involved in multi-sectoral partnerships related to health promotion. More specified delineations of these relationships are found in the web supplement.

Of the 43 scales, 60% ($n = 25$) were unidimensional, which means that measures were considered to capture a single construct of trust. The remaining 18 trust scales were multidimensional, where multiple constructs were captured in a single measure. The majority (70%, $n = 16$) of patient provider trust scales were unidimensional, whereas many health systems trust measures (67%, $n = 8$) were modeled with multiple dimensions.

b. Population studied

Health system trust measures have been predominantly designed, tested and validated in populations in the United States ($n = 37$, 82%). Few scales (Fig. 2) have been developed in other countries including the Netherlands ($n = 3$, 7%), Cambodia ($n = 2$, 4%), Ireland, Singapore, and Thailand ($n = 1$, 2% each). 41% of measures ($n = 18$) were tested in general populations while 22% ($n = 10$) were tested in multiple populations. 67% of measures ($n = 30$) were tested in specific populations, which include insured groups, veterans, parents, HIV-positive persons, incarcerated populations, distinct racial and ethnic groups, and particular patient populations.

c. Questions asked and content areas

The numbers of questions included in measures ranged from as few as 4 questions to as many as 59 questions (Table 1). On average, 12 questions were needed to develop a trust measure. Two of the scales have been developed to offer a choice between a long version (12 or 13 questions) and short version (4 or 9 questions).

On average, each measure captured 5 to 6 content areas (range: 3–8 areas) of our health systems trust content area framework (Fig 3). The most salient domains were communication (93%), honesty (91%), confidence (91%), and competence (89%). Fidelity, system trust and confidentiality were moderately represented across measures (60%, 44% and 40%, respectively). The least represented domain was fairness (22%). Stratified analysis of measures by relationship showed that domains were not always uniformly distributed. The five most frequent domains (i.e. honesty, communication, confidence, competence and fidelity) remained relatively consistent and high (75%–100%) across all relationships. Measures looking at interpersonal relationships (between patients and doctors/nurses, pharmacists or insurers) consistently did not capture systems trust, while those focusing on insurers and health systems always captured this domain. Confidentiality was always captured in insurer–patient relationships but less frequently elicited in health systems–patient (50%), doctor/nurse–patient (41%), pharmacist–patient (0%), or researcher–patient (0%) relationships. Fairness was partially represented in health systems–patient, pharmacist–patient, and researcher–patient relationships (33%–50%), somewhat represented in the insurer–patient relationship (25%) and seldom represented in the doctor/nurse–patient relationship (9%).

d. Rigor of design

While all scales were built upon prior studies, other trust scales or literature reviews, assessment of *face and content validity* varied in terms of extent and rigor. 53% ($n = 24$) of the measures employed at least one qualitative method in designing their scale or index, and only 33% ($n = 15$) were pilot-tested. The range of methods used included focus groups, individual interviews, expert consultation, or discussion and deliberation of a substantively diverse study team. Individual interviews were chosen in cases where fears of

Table 1
Item distribution of trust measures.

Relationship types	Range of items	Author, year
Doctor/Nurse/ Patient	4–9	(Corbie-Smith, Thomas, & St George, 2002; Doescher, Saver, Franks, & Fiscella, 2000; Dugan, Trachtenberg, & Hall, 2005; Radwin & Cabral, 2010; Safran et al., 1998; Wiltshire, Person, & Allison, 2011)
	10–14	(Altice, Mostashari, & Friedland, 2001; Anderson & Dedrick, 1990; Bova et al., 2012; Freburger, Callahan, Currey, & Anderson, 2003; Hall, Camacho, et al., 2002, Hall, Zheng, et al., 2002; Kao, Green, Davis, Koplan, & Cleary, 1998; Moseley, Clark, Gebremariam, Sternthal, & Kemper, 2006; Ozawa & Walker, 2011; Thom et al., 2011; Thom, Ribisl, Stewart, & Luke, 1999, Wallston et al., 1973)
	15–51	(Bova, Fennie, Watrous, Dieckhaus, & Williams, 2006; Hillen et al., 2011; Leisen & Hvman, 2001)
Health systems	4–9	(Altice et al., 2001; Armstrong et al., 2008; Katapodi, Pierce, & Facione, 2010; LaVeist, Isaac, & Williams, 2009; Shea et al., 2008)
	10–19	(Egede & Ellis, 2008; Kelly, Njuki, Lane, & McKinley, 2005; Rose, Peters, Shea, & Armstrong, 2004; Shelton et al., 2010; Thompson, Valdimarsdottir, Winkel, Jandorf, & Redd, 2004)
	20–59	(Mascarenhas et al., 2006; Straten, Friele, & Groenewegen, 2002)
Insurers	4–13	(Dugan et al., 2005; Goold, Fessler, & Moyer, 2006; Ozawa & Walker, 2009; Zheng, Hall, Dugan, Kidd, & Levine, 2002)
Pharmacists	12–30	(Ngorsuraches et al., 2008; Zhang, Jin, Ngorsuraches, & Li, 2009)
Researchers	4–12	(Hall et al., 2006; Mainous, Smith, Geesey, & Tilley, 2006)
Other[a]	5–14	(Gadd et al., 2011; Jones & Barry, 2011)

[a] The other category includes health information exchanges and health promotion partnerships.

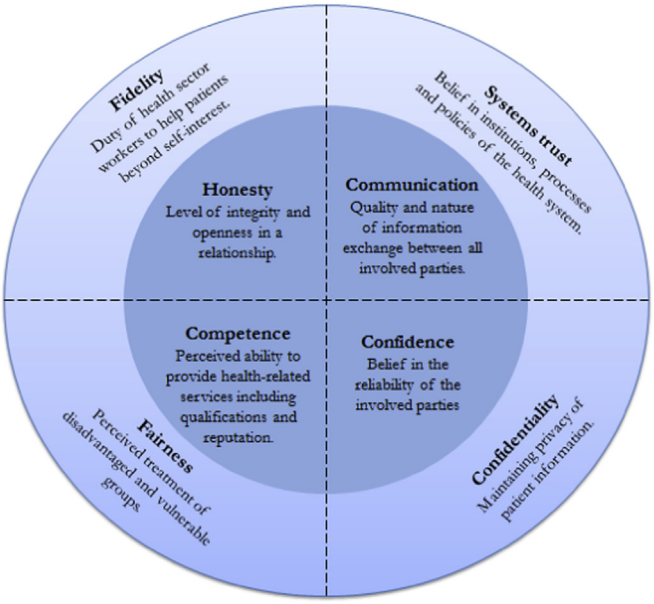

Fig. 3. Health systems trust: Content area framework.

disclosure or special populations were involved. Expert consultation with study teams drew upon strengths of multidisciplinary representation from sociology, psychology, medicine, law, management, social sciences, and health services research. Among the 20 measures that did not employ a qualitative method, 16 (75%) were applied in new populations and contexts.

To assess *construct validity*, most measures tested associations of their trust constructs with other variables, other trust scales or subscales. We identified six general constructs that were used in validating the trust scales: quality, satisfaction, agency, financial factors, equity and background. Trust variables were tested against quality variables such as length and number of visits, satisfaction variables such as patients' desire to remain in a relationship with a provider or insurer, and agency variables reflecting the depth of the relationship. Trust was also correlated with financial or costing variables, equity variables and personal histories. Only 4% ($n = 2$) of the reviewed articles did not explicitly note observations on construct or concurrent validity.

Among the 43 scales, 98% ($n = 42$) presented some reliability data. Assessment of reliability was performed for 41 (95%) of the scales using Cronbach's alpha, which examines how well the questions work together in the measure. The scores ranged from 0.75 to 0.97, which suggest these measures have high levels of internal consistency. While 3 measures did not report this statistic, 2 of these measures tested them in different populations or captured test–retest reliability. 35% ($n = 15$) of the scales discussed having assessed test–retest reliability, which captures consistency of scale results over time. Only 16% ($n = 7$) of the scales assessed inter-rater reliability, which describes how consistently the scale measures across interviewers or scale implementers. 42% ($n = 18$) of scales reported at least two of these three reliability measures (see web supplement for details).

Discussion

The review identified 45 measures of trust which may act as predictors of access and service utilization in monitoring and evaluation efforts. While we found growing numbers of health systems trust measures, very few were developed and validated in low- and middle-income countries. In addition, the majority of measures focused on relationships among doctors, nurses and patients, rather than examine broader interactions at the health system and societal levels. To improve service uptake and reach better health outcomes, it would be beneficial to measure and monitor trust levels especially in countries with weak health systems, and look beyond traditional interpersonal relationships.

More work should also be done to improve existing trust measures. Validity of the measures could be strengthened by using qualitative methods and pilot-testing scales and indices. More attention should be drawn to the underrepresented content areas (fidelity, system trust, confidentiality and fairness), and reliability assessment should extend beyond internal consistency to examining test–retest and inter-rater reliability.

Our results are limited by our search strategies including the databases searched and inclusion/exclusion criteria. Our focus on English-language publications due to resource limitations and potential publication bias may have affected our findings. Moreover, emphasis on the health-related literature may have led us to miss articles using multidisciplinary approaches to measuring trust. Despite these limitations, we believe we have identified and synthesized relevant trust measures in a systematic and meaningful manner.

Application of trust measures

There are many benefits to using scales and indices to measure trust within the health system. They can quantify levels of trust, examine changes over time or variation across populations, and can be easily incorporated in existing monitoring and evaluation. For instance, identified measures can be used by health workers, health program implementers and researchers to describe care seeking behavior or uptake of medical advice. Higher levels of trust in the health system, which is linked with better utilization of care, may result in better health. Trust measures have been used to understand variation within populations or study complex phenomena and social processes through linkages with outcomes such as quality of care, preventative care-seeking behaviors, adherence to treatment and continuity of care (Armstrong et al., 2012; Lee & Lin, 2009). Trust measures have also been used to look at experiences individuals have with various aspects of the health service as well as community acceptance of practitioners (Haas, Phillips, Baker, Sonneborn, & McCulloch, 2003; Krupat, Bell, Kravitz, Thom, & Azari, 2001) or relationships with socially marginalized populations (Bova et al., 2012). Recent studies have started to use trust measures in larger prospective designs (Kim et al., 2007). Increased application of these measures in low- and middle-income country settings (Ngorsuraches et al., 2008; Ozawa & Walker, 2009) would contribute to health systems strengthening.

Beyond trust scales and indices

Besides developing quantitative measures of trust, researchers have employed alternative methods, qualitative or experimental, to study trust. Most qualitative studies conduct semi-structured interviews and focus groups, though some use ethnographic techniques (Newell & Swan, 2000) or diaries to examine trust (Lonkila, 1997). Such methods have allowed patients to elaborate on their past illness episodes and describe the nature of their healthcare relationships (Mechanic & Meyer, 2000). Other benefits of qualitative methods include the ability to capture detailed understandings of the iterative process of trust building, and appreciate the local interpretations of trust (Goudge & Gilson, 2005).

Few experimental methods have also been used to investigate trust within the health system. One example is a study of how knowledge about physicians' financial incentives affects patient trust (Hall, Camacho, Dugan, & Balkrishnan, 2002). Economic game theory has also been applied in health such as a study examining the brain functioning in social anxiety disorders through trust games (Sripada et al., 2009). Scarce use of experimental methods may reflect the difficulty of designing experiments around trust. For instance, trust cannot be pre-selected by a third party, may change over time and cannot easily be "assigned". Greater use of these alternative methods may also reveal important insights about trust relationships within the health system.

In conclusion, this review suggests ways to methodologically, conceptually and practically improve measurements of trust within the health system. Trust measures can play an important role in improving access and quality of care, which are inevitably linked with better individual and population health.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.socscimed.2013.05.005.

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