REVIEW ARTICLE

How do you measure trust in social institutions and health professionals? A systematic review of the literature (2012–2021)

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Abstract

The importance of measuring trust in health systems has been accentuated due to its correlation with important health outcomes aimed at reducing COVID-19 transmission. A systematic review published almost a decade ago identified gaps in measures including the lack of focus on trust in systems, inconsistency regarding the dimensionality of trust and need for research to strengthen the validity of measures. Given developments in our understandings of trust since its publication, we sought to identify new scales developed, existing ones adapted in response to identified gaps, and agendas for future research. Using the PRISMA approach for systematic reviews, we conducted a search in four databases. A total of 26 articles were assessed. Twelve new scales were identified, while 14 were adapted for different settings and populations. Literature continues to focus on measuring trust in health professionals rather than systems. Various shortcomings were identified, including some articles not mentioning the dimensions included in the scale and suboptimal use of validity and reliability testing and/or reporting. Moreover, a variety of terms were used for dimensions. Future research is needed to address these

gaps and consequently, to understand their correlation with health behaviors and outcomes more accurately.

1 | INTRODUCTION

Trust has been linked with many important healthcare objectives such as higher access and utilization of medical care (Russell, 2005), higher effectiveness of and adherence to treatment among patients (Hall et al., 2002) and higher satisfaction with care (Safran et al., 1998). The COVID-19 pandemic has accentuated the importance of trust in health systems and social institutions with populations exhibiting lower trust having higher mortality rates (Oksanen et al., 2020) and vaccine hesitancy (Trent et al., 2021). As such, how we define and measure trust is of critical importance if healthcare professionals and institutions (e.g. health systems, governments) are to work toward effective strategies for building trust as a means of achieving healthcare objectives.

Within health research, definitions of trust involve the notion of expectations by the public that healthcare providers will demonstrate knowledge, skills and competence, as well as act in the patient's best interest (Davies, 1999, p. 193). Given that healthcare providers practice within a broader health system and context, trust extends beyond relationships between patients and providers to include healthcare services governance/stewardship, health systems, and broader social institutions (e.g., political institutions) (Luhmann, 1995)—this, in turn, shapes cultural expectations and assumptions about health and healthcare. As such, in addition to measuring trust in specific providers and healthcare systems, an understanding of how trust in broader social institutions is reflected in individuals' health behaviors is important. In this review, we adopted Barnes (1942) definition of social institutions, described as: "the social structure and machinery through which human society organizes, directs & executes the multifarious activities required for human need" (p. 29). We felt it important to consider social institutions, beyond healthcare, given our recognition that all institutions, though distinct, are interwoven with other institutions (and the individuals performing duties to meet the objectives of the institution). For example, healthcare as an institution has objectives and procedures that cannot be separated from systems of governance, expert knowledge (science), regulation, and healthcare provision. The healthcare system may fulfill a specific objective related to the health of the population, but many social institutions (e.g., government, public health), as a collective, inform the organization and activities of our societies that shape population health. These institutions thus, may play a role in public perception of the care provided by specific local services and clinics where healthcare professionals work (Calnan & Sanford, 2004; Meyer et al., 2008).

In 2013, Ozawa and Sripad published a review paper with the aim of systematically documenting existing measures of trust in healthcare, the relationships and populations they studied, the content areas captured and the rigor of existing measures (Ozawa & Sripad, 2013). The authors highlight gaps in measures used at the time, including: (1) few measures of trust in healthcare investigate both provider and macro-level structures; (2) while common dimensions of trust were noted (fidelity, system trust, fairness, confidentiality, honesty, communication, competence and confidence [10–14]), there was inconsistency in the extent to which one, some, or all dimensions of trust were explored across measures; (3) there are competing perspectives on the dimensionality of trust. While the view that trust is a multidimensional construct is prevalent, many empirical studies did not differentiate between competence and other aspects of trust. From their review, Ozawa and Sripad recommend that research be conducted to: (1) strengthen the validity of measures, paying greater attention to underrepresented content areas such as fidelity, system trust, confidentiality and fairness; and (2) develop measures that acknowledge trust as a multidimensional construct (Ozawa & Sripad, 2013).

In addition to the limitations of measures noted by Ozawa and Sripad, measures used prior to 2013 have notable limitations in their approach to construct and discriminant validity. For example, research has led to advancements in how trust is conceptualized as distinct from the related concepts of dependence, hope and obligation (Brown & Meyer, 2015; Meyer & Ward, 2013; Ward et al., 2015). Earlier theoretical work has also identified the distinction between trust and confidence (Luhmann, 2000), though as of 2013, 91% of measures still included confidence as a dimension of trust (Ozawa & Sripad, 2013). As such, it is important to interrogate the extent to which both related and distinct concepts are included as part of the convergent and discriminant validation process in more recent measures.

Given that the latest review exploring this topic was published almost a decade ago (in May 2012), we conducted a systematic review with the aim of: (1) identifying studies (published from May 2012 till to December 2021) that sought to develop or validate a scale or index of trust in health systems or broader social institutions; (2) assessing whether identified studies have addressed documented limitations in measures of trust; (3) documenting existing gaps that might inform future research agendas in the measurement of trust.

2 | MATERIALS AND METHODS

We conducted a systematic review following the PRISMA guidelines and using four databases following Ozawa and Sripad (PubMed, Scopus, PsycINFO, and ERIC), to identify scales and indices that have been developed to measure trust in social institutions and/or health professionals. We did not limit our search to health systems; rather, we sought to identify measures of trust in social institutions more broadly that might be relevant to health system trust (e.g., institutions responsible for developing fiscal policy or regulations guiding practice). The search strategy was developed and refined with the assistance of a library scientist, included four key terms (trust, scale, healthcare, and validation) and was finalized on the 23rd of August 2021. We did not add the term "social institutions" because the broad search terms were inclusive of institutions. The review of articles, discussed below, was the point at which we identified social institutions of focus. The search strategy for each database can be found in Supporting Information S1: Appendix 1. The search was limited to English-language articles.

Articles included in the review were those that: (1) were published from May 2012 until December 2021; (2) focused on developing scales and indices that measure trust; (3) developed a new scale or index or revalidated an existing scale in a new population; and (4) focused on health systems, health professionals and/or and social institutions. Articles were excluded if the focus was: (1) developing scales and indices that measure distrust or mistrust as they are semantically distinct concepts, are defined differently, and are associated with different attitudes and behaviors (see for example Devine et al. [2020]); (2) conceptual pieces that discussed but did not quantify trust; (3) a scale or index to measure a related concept of which trust was one of the components; and (4) a book chapter or dissertation.

We used Covidence software to identify duplicates and for screening purposes. Once duplicates were removed in Covidence, the screening process was conducted by three researchers (SEA, MHGN, and HH). Each article was screened by at least two of the three researchers. The decision tree in Figure 1 was used as a guide to screen titles
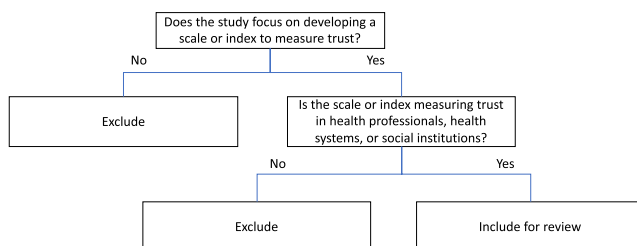

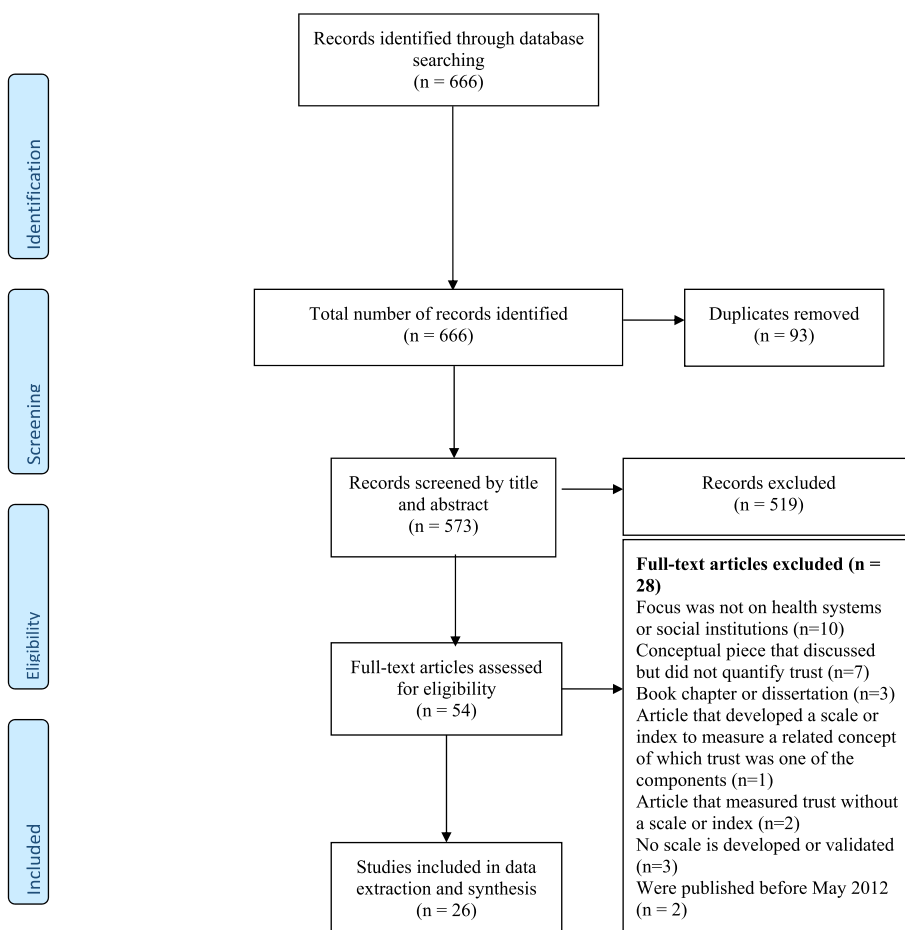**FIGURE 1** Decision tree for article inclusion.

FIGURE 2 PRISMA flow chart.

and abstracts. Articles that were deemed eligible were moved to the full-text review which was conducted independently by these three researchers. Discrepancies were discussed and resolved through consensus.

Once the final number of articles was determined, a read through of these articles allowed the research team to gain a high-level understanding of the types of information provided. Two researchers (MHGN and HH) independently developed data charting forms which were then discussed and combined into a single form used to capture all key elements of the identified articles. The variables collected through the data-charting form included: first author, year, country, purpose, tool used, sample population, relationship examined, dimensions of trust, study design, approach, validity and reliability testing, and key findings.

Figure 2 outlines a flow chart illustrating the selection process at each screening step. Our search identified a total of 666 articles of which 93 were duplicates. Two researchers screened the titles and abstracts of 573 articles of which 519 were excluded based on the relevance and eligibility criteria. A total of 54 articles were retrieved and reviewed in their entirety for relevance. Of these latter 54, 26 were excluded based on the five exclusion criteria noted above. For example, while the studies by Buldur (2021) and Gille et al. (2020) explored important dimensions of trust, they were conceptual pieces and were thus excluded from the review. Two additional studies were excluded as they were published before May 2012. A total of 26 articles were considered eligible for this review.

Although it is conventional to assess inter-rater reliability (McHugh, 2012), our approach to screening was iterative and the inclusion of articles involved team discussions rather than blinded screening followed by comparisons.

In title and abstract screening, three members of the team discussed the inclusion of articles in consultation with the corresponding author responsible for the design and conceptualization of the study. This step meant that inter-rater reliability scores calculated using Covidence do not reflect the integrity of our screening. By default, the Covidence software counts "maybe" votes as "yes" votes in inter-rater reliability calculations at the "Title and Abstract" screening stage. At times articles were placed under "maybe" when a rater was uncertain about a specific detail, so the article was reviewed through consultation with the larger team. For example, one article developed a conceptual model to measure trust, however, this model is to measure the antecedents of trust (the factors that need to be in place for trust to occur) rather than the dimensions of trust itself (Siddiqua et al., 2018). Therefore, this article was excluded upon discussion among the team. Even if upon discussing an agreement was reached, it is possible that the assumptions that "maybe" is "yes" lead to an overestimation of disagreement. Team discussions during the title and abstract screening led to reliability in coding and consequently no disagreements in rating between investigators screening at the full article stage.

3 | RESULTS

3.1 | Trust relationships and dimensions

Supporting Information S1: Appendix 2 outlines key information related to relationships and dimensions, as well as the target population studies. Fourteen studies focused on evaluating or validating an existing scale while the remaining focused on development and validation of a new scale. Of the 26 articles, over half (*n* = 14) explored the trust relationship between patients and individual healthcare providers (e.g., physicians, nurses, oncologists, community health workers, and midwives) while few (*n* = 7) measured trust in healthcare team and system. The remaining articles focused on institutions at the societal level such as public health authorities (*n* = 2) and government organizations (*n* = 3).

Among studies included, there was a nearly even split in the number of multi- and uni-dimensional scales. Ten studies did not explicitly mention the dimensions explored. Of those that included dimensions, some did not define them. Recurring dimensions across scales included: competence, integrity, communication, benevolence, fidelity, fairness, global trust (defined a "a catchall for concerns that have strong connections with several of the other areas and do not fit exclusively in one" (Hall et al., 2001) (p. 623)), confidentiality, relational comfort, and dependability. Figure 3 provides an overview of the number of articles that included dimensions of trust, with the most frequently considered dimensions being competence and benevolence. Dimensions mentioned only once were grouped into the "others" category.

3.2 | Population studied

Studies were conducted in the United States (*n* = 6), the Netherlands (*n* = 3), multinational collaborations (*n* = 3), India (*n* = 2), Italy (*n* = 2), China (*n* = 2), Nigeria (*n* = 1), Greece (*n* = 1), Australia (*n* = 1), Germany (*n* = 1), Liberia (*n* = 1), Iran (*n* = 1), Finland (*n* = 1), and Turkey (*n* = 1). Of the 26 articles included, 9 focused on outpatients, three on inpatients at clinical departments, and the remainder on "other" populations (e.g., public servants and the general population).

3.3 | Rigor of design

The number of items across scales and indices ranged between 4 and 31. Some methods used to develop or revalidate scales included: focus groups, individual semi-structured interviews, in-depth interviews, open-ended qualitative
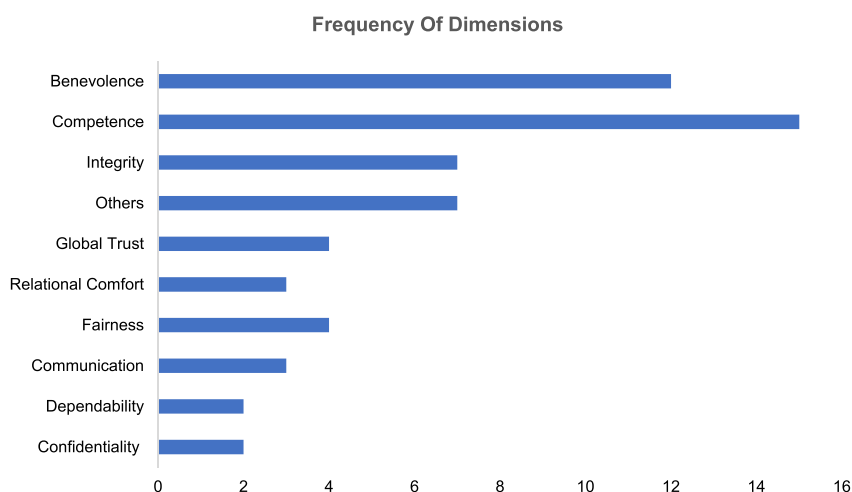
FIGURE 3 Frequency of dimensions. *Others*: Confidence in labor [childbirth], partner's support, respect for the physician, acceptance of providers' drawbacks, economic, comfort, reliability.

interviews, one-on-one interviews with key informants or experts in the field, surveys, questionnaires, and consultative processes.

Most articles (*n* = 18) included at least one qualitative method in designing their scale or index, and 31% (*n* = 8) pilot-tested their scale or index. From the papers that did not include a qualitative method (*n* = 8), six included measures that were tested in a new population or context.

Most articles (*n* = 20) assessed construct validity with eight and five articles having assessed convergent and divergent/discriminant validity, respectively. Many articles assessed the validity of the trust scale by examining the association between trust and other variables, trust scales or subscales. Across articles, various statistical analyses were conducted to assess construct validity, these included confirmatory factor analysis (*n* = 6) and exploratory factor analysis (*n* = 4). From the 20 papers assessing construct validity, 35% (*n* = 7) found the scale to be unidimensional, while only 10% (*n* = 2) found the measures to be multidimensional. Furthermore, 15% (*n* = 3) of the papers stated that "Trust" is a one-dimensional construct. Lastly, 45% (*n* = 9) did not clearly address the dimensionality of the scale.

All included papers addressed reliability with internal consistency being most frequently assessed (*n* = 23) and Cronbach's alpha the main statistic reported. Most articles (*n* = 24) presented a Cronbach's alpha score above 0.7, which demonstrates good levels of internal consistency across measures. The scales with the largest Cronbach's alpha were the PHC trust measuring tool (Sadeghi-Bazargani et al., 2019; 1–5) and the Trust in Military Leader Scale (Yeşilbaş & Çetin, 2019); both with an α = 0.98. The scale with the smallest Cronbach's alpha was the Trust scale for governance networks (Song et al., 2019) with alpha = 0.65. Only six of the included papers assessed reliability using test-retest. The largest score was r = 0.99, p < 0.001 for the Self-reported TRUST questionnaire (Chatzea et al., 2017), and the lowest score was r = 0.51 (p < 0.001) for the IT-TiOS-SF scale (Bani et al., 2021).

3.4 | Evolution of knowledge

Since the Ozawa and Sripad (2013) paper, four studies have developed new scales to measure the public's trust in more specific domains of healthcare, such as public healthcare (Anand & Kutty, 2015), biomedical research (Baik et al., 2016), primary care (Sadeghi-Bazargani et al., 2019) and public health authorities (Holroyd et al., 2021). In addition, three new scales have been developed to measure trust at a societal level: trust in childhood immunizations (Frew et al., 2019), military leaders (Yeşilbaş & Çetin, 2019) and a measure to evaluate employees' interpersonal trust in their employers in a multidisciplinary setting (Vanhala, 2020).

Research has also been conducted in response to calls for scales that measure trust in a resource-poor settings. Two scales have been developed and validated to measure trust in the public healthcare system (Anand & Kutty, 2015), and physicians (Gopichandran et al., 2015), in India. Further, a multi-country study developed and validated a trust scale for community health workers targeting clients from Bangladesh, Haiti and Kenya (Sripad et al., 2021). A pre-existing scale has also been revised to assess the trust and teamwork between certified and traditional midwives in a country with a less developed healthcare system—Liberia (Lori et al., 2013). In order to develop trust scales for countries with special conditions, one study modified and validated an existing questionnaire to assess trust and performance among a new group of people during an economic crisis (Chatzea et al., 2017).

4 | DISCUSSION

The review identified 26 articles: 12 new scales and 14 validated scales for measuring trust in health professionals, health systems and social institutions. Since the latest systematic review published by Ozawa and Sripad (2013), few scales have taken into consideration the changing nature of trust (e.g., increase in social movements, greater agency of patients) with most studies continuing to focus on trust in health professionals, rather than looking at how health behavior is shaped by trust in macro level structures both within the healthcare system, and more widely (e.g., government funding of healthcare). Although the role of- and trust in-social institutions are important for population health (e.g., in cases of pandemics during which vaccine uptake is critical), this review demonstrates that still, few tools exist for measuring trust in broader social institutions, with the ones represented most frequently being healthcare institutions. For example, only one scale was identified to measure trust in government (Grimmelikhuijsen & Knies, 2017), despite the association between trust in government and public acceptance of health policy and recommended health behaviors (Moucheraud et al., 2021). As such, future efforts might be targeted at identifying the role of various social institutions in shaping health behaviors and incorporating these considerations in future measures.

Results also suggest that the measurement of trust has become more focused over the past decade; with older measures being validated or adapted for use in select clinical areas or specific populations. While these represent valuable contributions, there remains a gap in measures of trust at a population level to inform the development of strategies for (re)building trust across communities and populations. For example, the COVID-19 pandemic has illustrated that the willingness of the public to adopt preventative measures is greater when people have trust in government and public health officials (Mouter et al., 2020; Ward et al., 2021). Population-level data regarding the extent of trust then can help to advance efforts in securing public support and foster social action consistent with official recommendations. Rather than making more precise tools for measurement from dated measures, we recommend stepping back to evaluate the validity and utility of original measures—such as the Trust in Physician Scale or Public Trust in Dutch Health Care—so that they might be "modernized" for use at a population level. For example, items included in existing measures were generated pre-COVID-19 pandemic and prior to major social movements (e.g., public response to the murder of George Floyd) that changed discussions regarding social institutions (e.g., the police force). Within high-income countries, for example, conversations about social justice for populations historically disadvantaged by social institutions are more central than ever, particularly as they relate to how the management of COVID-19 led to further inequities in already disadvantages populations (e.g., see Bhalla et al., 2022). Richmond et al. (2022, p. 2) note the age of existing measures as problematic, "many existing measures were developed over 20 years ago in a different era of medical care, potentially limiting current-day applicability." While not yet empirically supported, we suggest that the COVID-19 pandemic, amplification of access to (mis)information via social and news media, and recent social movements challenging the legitimacy of social institutions has led to changes in trust. Researchers might consider whether, and if so how, trust has changed in the past decade and look to ensure that dimensions of trust, and items used to measure these dimensions, reflect trust in the current context. This will require more engagement with communities of focus to ensure survey items reflect what matters in terms of the assessment of trust. Following methods used by Hall et al. (2002), Straten et al. (2002), or Richmond et al. (2022), researchers

might review candidate items included in existing measures to determine the extent to which they are still relevant. Additional qualitative research investigating the nature of trust in populations of focus would also help to generate/refine existing items to ensure their relevance prior to validation studies.

The results of this review also highlight that measurements of trust in the health systems of low- and middle-income countries (LMIC) remain scarce which is worrisome given the implications for widening health inequities. Given the importance of validating scales in different contexts and for different populations, a stronger focus should be placed on efforts to develop measures that consider the cultural and social contexts of individual LMIC. Studies that have addressed the aforementioned are conceptual pieces that need resourcing to be translated into measures.

Discrepancies identified by Ozawa and Sripad (2013) between the unidimensional versus multidimensional nature of trust were also found in this review. While there are some benefits to considering trust as unidimensional (e.g., using a few items to measure the dimension of trust) such as reducing the burden on respondents, these approaches may undermine the complexity of trust. Moreover, different terms are being used to describe the same dimensions, making it difficult to understand the key (and most recurring) dimensions of trust (e.g., which dimension matters more between competence and interpersonal skills). Benevolence, competence, and equity were the most recurring dimensions, but the category "other" was also one of the most frequent—this is not occurring due to the rise of new dimensions to reflect the evolution of trust but rather, is an inconsistency in taxonomy. Our work supports calls for greater consensus about definitions, dimensions, and key attributes of trust (Taylor et al., 2023). A focus should be placed on unifying the taxonomy and understanding the implications of the most frequent dimensions of trust. Consideration of dimensions as they relate to specific sectors/institutions is also important. For example, in digital care, as it may be more difficult for individuals to assess benevolence and equity in technology (Foley et al., 2021).

Across the articles, rigor has been partly addressed by attempts to establish validity and reliability of measures; however, further improvements are warranted to assess these psychometric measures more carefully. For example, inter-rater and test-retest reliability continue to be underused when assessing reliability. Most articles did, however, clearly explain the approach, including the qualitative methods used (e.g., qualitative interviews) to validate the scale. Construct validity was most often assessed, but with only eight articles assessing convergent validity; limiting our ability to understand how various dimensions of trust are correlated. For example, satisfaction has been shown to be correlated with trust when using the Trust in Physician Scale; however, its role in assessing convergent validity was lacking. Similarly, concepts such as dependence, hope and obligation were not considered in the discriminant validation process, despite the aforementioned semantic differences with trust. Finally, the majority of papers did not include mention of how to use the scales in a practical setting; that is, whether the scores can be indexed/summarized and if/how researchers/practitioners might define cut-offs indicative of categories of trust (if that is indeed their goal as some might view this is a futile exercise if they are of the opinion that trust is a scale and not a matter of "high" or "low").

This review identified various gaps that remain in the trust literature, specifically related to the development and application of trust scales in various settings, across different population groups and geographical locations. Since completing the data collection and analysis for this paper, Richmond et al. (2022) have published scales for measuring trust in my doctor, trust in doctors in general and trust in the health care team. These scales are responsive to some of the limitations identified in previous measures; namely, they are multidimensional in nature, speak to the changing nature of trust (specifically ongoing and historical racism as a factor shaping trust) and the inclusion of items to assess construct validity in scale development. They also included a measure of trust in government to account for the fact that experiences in healthcare do not fully account for one's trust, related to discriminant validity. To date, we would recommend readers consult these measures as a first step if considering scales for the purpose of assessing individuals' trust in their personal or regular doctor, doctors in general, and the larger health care team. However, as the authors note, future research is needed to develop shorter versions of each scale that maintain the multidimensional structure, particularly for intervention research and research where trust is not the primary variable of interest (Richmond et al., 2022).

The strengths of this review include the inclusion criteria which sought to focus on social institutions more widely, the article review process which included three different researchers and consultation process, and key recommendations to augment the current literature. Further research should address the gaps identified in this review (e.g., the lack of current scales targeting social institutions, the general population, and LMIC), explore how the taxonomy used for dimensions could be unified to support efforts in understanding key dimensions of trust, and identify the type of scales used to measure trust in technology as well as how key dimensions identified in this study can be applied in an era of digital care.

This systematic review has some limitations that warrant mention which include the focus on articles published after 2012—as mentioned in the Ozawa and Sripad (2013) paper, some articles may have been missed; as such, we would not have been able to capture these articles. Second, this review did not capture conceptual pieces which may be addressing the limitations mentioned (e.g., focusing on understanding the changing construct of trust). Future research might consider whether theoretical advances should inform the development of new dimensions of trust, candidate items and consequently, revised/novel measures.

5 | CONCLUSION

This review has identified various gaps that remain in the literature even after the latest review conducted a decade ago. As such, internationally there is an active research community using measures of trust with acknowledged limitations. Given the increasing importance of trust and its evolving nature (due to political and social climate that we argue has changed the nature of trust in many societies), concerted efforts should focus on (re)developing scales that are relevant and validated based on the setting and population. Importantly, trust in health professionals should no longer be considered in isolation as narrowly focusing upon trust in individual health professionals overlooks the importance of the context in which these professionals work. Moreover, research is required to strengthen the validity and reliability of measures, paying greater attention to key constructs that should be considered when assessing convergent and/or discriminant validity.

CONFLICT OF INTEREST STATEMENT

The authors have no competing interests to declare.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.