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Research Article

Applications and Consequences of Transparency in the Health Systems: A Systematic Scoping Review

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Abstract

Context: Transparency is a crucial factor in addressing information asymmetry and inefficiencies within health systems. However, its outcomes can vary significantly.

Objectives: This study aims to explore the applications and consequences of transparency in health systems.

Methods: A scoping review was conducted, searching databases including PubMed, MEDLINE (Ovid), Scopus, Web of Science, ProQuest, and Google Scholar up to 2023. The six-step protocol by O'Malley and Arksey for scoping reviews was employed, adhering to the PRISMA-ScR reporting checklist. Data were extracted and summarized using a data collection form, then entered into MaxQDA software for coding, categorization, and synthesis.

Results: The review included 97 documents published between 1994 and 2022, predominantly from the United States. The studies identified various applications of transparency, such as quality and safety, pricing and costs, personal health records (PHR), prescriptions, payments, insurance, waiting times, staffing, and statistical data. A total of 137 positive outcomes were reported, including improved quality, efficiency, empowerment, satisfaction, and competition. Conversely, there were 37 instances of no effect and 34 instances of negative outcomes, such as risk aversion, reduced quality, increased costs, and misinterpretation.

Conclusions: The variability in the outcomes of public reporting can be attributed to the type and level of reporting, the structure of the health system, and the economic and cultural contexts. To enhance transparency effectively, it is essential to consider its outcomes and implement it in a principled and precise manner to maximize benefits and minimize potential harms.

Keywords: Transparency; Public Reporting; Outcomes; Health System; Scoping Review

1. Context

Information asymmetry in healthcare arises when one party, typically healthcare providers, possesses more information than the patients. This imbalance can lead to market failure, as patients may not make well-informed decisions regarding their care. The consequences include increased healthcare costs, reduced quality of care, and inefficiencies such as over-treatment or under-treatment (1). Addressing this issue necessitates enhancing transparency and information symmetry by making health service information more accessible to the public, thereby empowering them to make informed choices and regulate the market (2). Transparency relies on the free flow of information (3), and according to the World Bank, it entails the reliable and timely dissemination of economic, social, and political information accessible to all stakeholders (4). Research and initiatives in this area are expanding, with transparency being applied across various fields within health systems (5). Although the specifics of disclosed information vary among countries, many developed nations have generally moved towards transparency based on their needs and limitations (6-9). Numerous studies have examined the effects of transparency, particularly on service quality (10-12). These studies indicate that by making healthcare providers' performance more visible and comparable, transparency and public reporting can stimulate competition, accountability, and learning, ultimately leading to better health outcomes and lower costs (13). However, the outcomes of

transparency in health systems have shown considerable variability (14-16). While reviews have been conducted on the consequences of transparency, especially regarding service quality, these reviews have typically focused on specific applications of transparency in healthcare (10-12). There is a lack of comprehensive reviews that encompass all applications and consequences of transparency.

2. Objectives

Therefore, this scoping review aims to compile the consequences of various applications of transparency within health systems to provide a holistic overview of its most significant aspects. The findings of this study can be particularly beneficial for developing countries, which may lag in transparency, by offering insights into global experiences, enhancing understanding of the what, why, and how of transparency in health systems, and applying these insights to improve their own systems.

3. Methods

3.1. Study Design

To achieve the study's aim, a scoping review method was employed due to the broad and complex nature of the research topic and related documents (17). The scoping review utilizes a structured and systematic search method but lacks some limitations of systematic reviews, such as the quality assessment of the reviewed articles. Consequently, a wide range of studies can be reviewed in less time, making scoping reviews suitable for policymakers seeking general evidence on specific topics (18). The six-step protocol by O'Malley and Arksey for scoping reviews was followed, which includes: Identifying research questions, identifying relevant studies using valid databases, reviewing articles and gray literature, selecting relevant studies from the initial pool, extracting data in the form of diagrams and tables, collecting, summarizing, and reporting findings, and optionally consulting stakeholders about the findings (18). Additionally, the PRISMA-ScR reporting checklist was adhered to.

3.2. Search Strategy

An initial search was conducted to identify the most suitable keywords and phrases, and a search strategy was developed. Given the breadth of the studies, the focus was on those reporting the outcomes of transparency in health systems, and the applications mentioned in these studies were also collected. Thus, the main keywords in this search formed three general branches: "Transparency," "health system," and "outcomes." The complete search strategy and the number of documents obtained are detailed in the Appendix.

3.3. Data Sources and Screening

Data were searched in databases including PubMed, MEDLINE (Ovid), Scopus, Web of Science, ProQuest, and Google Scholar up to 2023. Additionally, public databases were searched to access gray literature. The studies were imported into EndNote software, and screening was conducted by two authors, first based on the titles, then on abstracts and full texts. Disagreements between the two were reviewed and resolved by a third author. Inclusion criteria were studies that addressed applications and outcomes of transparency in health systems, while exclusion criteria included irrelevant and non-English studies. The screening process is shown in Figure 1.

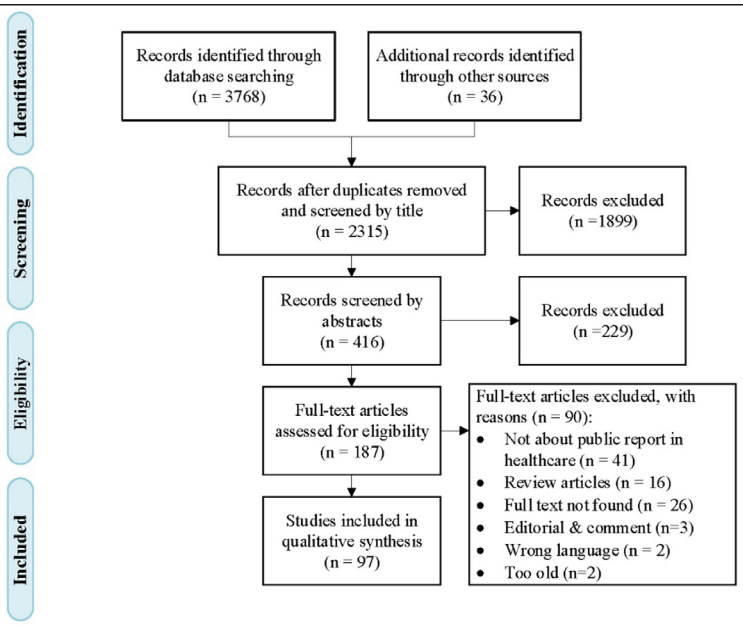

Figure 1. Document screening process flow chart

3.4. Data Extraction and Analysis

Data from the final documents were extracted and summarized using a data collection form, which included general components (such as authors, year of publication, country of study, and study method) and specific titles (including declared applications and outcomes, mechanisms of information dissemination, and declared objectives of transparency). The results were entered into MaxQDA qualitative analysis software, where findings were coded and categorized. Thematic analysis was used to analyze and synthesize components related to the research topic. yEd Graph Editor software was utilized to design a graphic diagram summarizing the applications and consequences of transparency.

4. Results

Finally, 97 documents were included in the study (19-114). A few documents were excluded for several reasons despite containing significant information. Two studies were excluded due to their age and the possibility of non-application of their results (115, 116). Three documents were editorials and comments (117-119). Five documents did not include public reports; however, three of these included information reports for physicians and providers (120-122), and two addressed health education and close interaction with patients (123, 124). Two studies were not in English (125, 126), and in 26 cases, the full text of the documents was not found, which mostly included conference abstracts (127-151). Sixteen review studies were also identified (16, 152-163) and were excluded from the review, but their primary studies were reviewed, and new cases were included in this study. The final documents were published from 1994 to 2022, with most conducted in the United States (Figures 2 and 3).

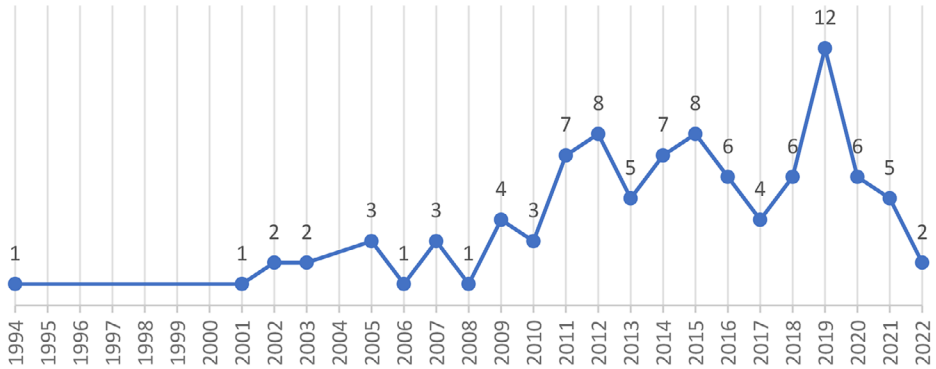

Figure 2. Frequency of studies based on publication year

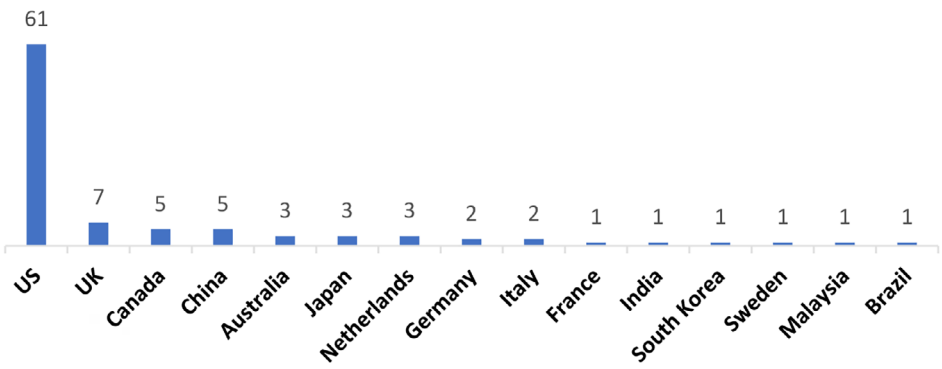

Figure 3. Frequency of studies by country

In terms of the study method, original and primary studies were included, of which 9 cases utilized the qualitative method, including interviews (13, 41, 75, 80, 87, 108, 112) and Delphi (85), and two cases employed a mixed method along with a quantitative survey (75, 80). The remaining studies were conducted quantitatively, including observational case-control (19, 28, 32, 36, 49, 51, 59, 64, 72, 84, 93, 97-99, 101, 113), randomized controlled trials (RCT) (20, 23, 25, 31, 34, 60, 78, 82, 92), quasi-experimental intervention (40, 63, 65, 66, 77, 96), difference-in-differences (DID) design (46, 61, 71, 78, 89, 95, 102, 106, 111, 114), prospective cohort (88, 94), retrospective cohort (37,

50, 71, 81, 105), survey (24, 26, 55, 56, 67, 74, 75, 80, 86, 100), before and after (22, 27, 29, 30, 33, 35, 39, 43, 46, 51, 58, 62, 73, 76, 79, 91), time series analysis (21, 42, 48, 68, 94, 95, 104, 105, 107, 109), and Data Envelopment Analysis (DEA) (109). For data analysis, correlation and regression models were predominantly used (19, 22, 27, 32, 35, 36, 38, 42, 44, 47-49, 52-55, 57, 63, 64, 67-71, 73, 76, 78, 79, 81, 83, 84, 90, 97, 98, 103, 107, 109, 110, 113). One of the documents included was the report of the American Thoracic Surgeons Society (45).

In the studies, transparency was primarily enhanced with goals such as organizational learning and performance improvement, quality and safety improvement of services (e.g., reducing mortality and hospital infections, reducing readmission rates), improving care outcomes through active patient participation, increasing competition and accountability, and maintaining reputation. Additionally, goals included increasing efficiency and reducing healthcare costs, reducing inappropriate prescriptions (e.g., cesarean rates and unnecessary imaging), and optimizing staff quantity.

In the dimension of community empowerment, transparency aimed to increase patient satisfaction, awareness, and health literacy regarding various health aspects, including diagnosis and treatment, awareness of health services, and strengthening decision-making and patient choice. It also aimed to enhance patient awareness of financial relationships among healthcare providers and industrial companies, reduce anxiety about services, strengthen participation in decision-making, and improve patient-staff relationships. Finally, increasing access to high-quality and affordable services and medicines for patients and improving data and reporting quality were other goals mentioned for transparency in the health system.

To achieve these goals, mechanisms to promote transparency generally included publishing information on patient panels, electronic health records (EHR), personal health records (PHR), access to paper patient records, publishing on government and private websites, health insurance websites, and online report cards, which were promoted by the media and press to disseminate information and increase transparency. The results of the document analysis are presented below, based on the outcomes of each of the applications of transparency in the health system.

4.1. Transparency of Quality and Safety of Health Services

Most of the studies found (58 cases) have evaluated the consequences of service quality and safety transparency, with 19 cases (23-25, 28, 34, 38, 41, 51, 53, 59, 62, 75, 77, 82, 83, 106, 108, 110, 114) publishing a set of general information in this field. The remaining studies have focused on publishing specific indicators, such as the effect of publishing specific cases like mortality rates, as mentioned below. Most studies have measured the effect of transparency of this information on the quality and safety of care. Among them, 12 cases concluded that publishing this information leads to improvement in the quality and safety of care (23, 25, 38, 51, 53, 62, 75, 77, 114), including reducing mortality of patients under intervention (38, 59) and increasing quality improvement efforts (24, 25, 41). One study concluded that quality improvement occurred more in weaker centers because, due to the ceiling effect, stronger centers could not achieve significant improvement (114). Additionally, one study found that publicizing information was more effective in improving quality than private reports (25). The results of two studies showed that transparency was ineffective on the quality of care (28, 34). One study concluded that transparency leads to increased social welfare and reduced inequality in the short term but reduced social welfare in the long term (83), and another study stated that the impact of transparency on quality and satisfaction depended on different conditions (110).

Regarding other outcomes of this application of transparency, in the dimension of efficiency, one study concluded that it led to less payment for services (reducing patient costs) (59), adjusting the use of services (106), helping to cope with irrational use of medicine (82), and reducing length of stay (38). In the dimension of access, it led to increased specialization and reduced geographical specialization in the short term (83) and early and continuous service delivery (53). From the market perspective, it led to increased competition (59, 82), increased awareness and accountability of staff (41), and one study showed that it was effective on the reputation and public image of providers but had no impact on the market share of the provider (25). From the perspective of community empowerment, two studies concluded that it led to improved decision-making and choice of patients (82) and a more accurate public perception of service quality (25), but one study stated that it alone does not act as a stimulus for patient decision-making and performance improvement (108).

4.2. Reporting Treatment Outcomes

Twelve studies in the field of quality transparency of services specifically addressed the transparency of treatment outcomes and their results (19, 27, 37, 45, 49, 72, 79, 89, 93, 97, 99, 101). The outcomes in the quality dimension included seven cases of improved quality and safety of care (79, 101), encompassing increased quality improvement efforts (45), reduced mortality (19, 72, 99), and improved treatment outcomes (72) among patients under intervention. However, five cases reported no impact on quality, including no effect on short-term quality of care (89) and no effect on patient mortality (49, 89, 93, 97). Conversely, one study reported an increase in mortality among patients who did not receive the intervention, indicating the possibility of risk aversion by service providers (72). Inappropriate outcomes reported in the qual-

ity dimension included performing hasty interventions before definitive diagnosis, converting means to an end, and creating a tunnel vision in quality improvement, such as insufficient attention to patient preferences and misdirection of scarce resources (45).

In the access dimension, seven studies reported risk aversion and reduced service delivery to high-risk individuals (27, 49, 72, 97, 101), including the possibility of risk aversion by surgeons (93) and increased racial discrimination due to risk aversion by physicians (27). However, two studies did not find evidence of risk aversion (37, 93). This difference may stem from the type of health systems and the difference in providers' freedom of action.

In the dimension of market and community empowerment, one study reported no impact on the market share of the provider and the outcome of misinterpretation of information by patients (45).

4.3. Reporting Mortality Rate of Treatments or Hospitals

Eleven studies specifically addressed the disclosure of mortality rates of specific treatments or hospitals (21, 29, 44, 47, 52, 55, 57, 71, 81, 88, 104). The reported outcomes in the quality dimension included five cases of reduced mortality among patients under intervention (21, 29, 57, 88, 104) and three cases of no impact on patient mortality (44, 52, 71). However, one study reported that the mortality rate after discharge had increased (21).

In the access dimension, two studies did not find evidence of risk aversion (29, 81), but four studies reported risk aversion and reduced service delivery to high-risk individuals (71, 104) and risk aversion by less appropriate hospitals (44, 57).

From the market perspective, one study reported increased demand and market share for better hospitals (44), while another study reported no impact on the market share of the provider (47). Additionally, one study reported that this transparency did not cause physicians to use this information to refer patients (55). Finally, one study did not find evidence of data manipulation and fraud, and overall, no significant adverse effects were reported for this transparency (88).

4.3.1. Reporting Mortality Rate of Surgeons

Four studies addressed the disclosure of mortality rates of surgeons (26, 30, 32, 94). In the quality dimension, one study reported the outcomes of this transparency as reduced mortality of patients under intervention and reduced adverse complications (94), while another study did not find any impact on reducing patient mortality (30). This study also noted that this transparency reduced the number of surgeries performed by students (30).

In the access dimension, one study did not find evidence of risk aversion among surgeons and even reported increased acceptance of high-risk patients (94). Conversely, two studies reported risk aversion and reduced service delivery to high-risk individuals (26) and noted that heart surgery was not repeated for high-risk patients (32).

4.4. Reporting Quality of Care in Nursing Homes and Elderly Care

Four studies specifically addressed the transparency of quality of care in nursing homes and elderly care, all of which reported improved quality and safety of care in the quality dimension (35, 36, 43, 46). Other reported outcomes included improved efficiency (43), improved patient access to services appropriate to their needs (46), improved decision-making and choice of patients (46), and increased competition (43).

4.5. Reporting Hospital Infection Rates

Three studies addressed the transparency of hospital infection rates (56, 61, 68). In the quality dimension, one study reported reduced hospital infection rates (61), while two studies reported no impact on reducing hospital infections (56, 68). Additionally, one study reported no impact on increasing unnecessary medicine and service delivery and found no evidence of risk aversion (68). One study also reported increased competition as an outcome in this area (61).

4.6. Reporting Patient Evaluations of Services

Two studies addressed the public reporting of patient evaluations of services, both of which found that this transparency increased satisfaction and improved patient experience (48, 67). One study also reported that this transparency improved the quality and safety of care, with smaller hospitals and for-profit hospitals showing more improvement (67).

4.7. Reporting Hospital Readmission Rate

The transparency of hospital readmission rates was the focus of two studies, which measured its outcomes in the efficiency dimension (76, 98). One study reported a reduction in readmissions (98), while another study reported an adjustment in the quantity of acute and emergency care after discharge and found no impact on adjusting the overall quantity of post-discharge care (76).

4.8. Reporting Performance in Diagnosis

One study specifically focused on the transparency of diagnostic performance, reporting outcomes of improved disease diagnosis and reduced mortality among patients under intervention (105).

4.9. Transparency of Price and Cost of Health Services

Nine studies addressed the application of price and cost transparency of health services (33, 64, 65, 73, 86, 96, 102, 109, 113), primarily measuring its outcomes on efficiency

and reducing health costs. In total, five studies concluded that this transparency increased efficiency, which included paying less for services (reducing patient costs) (64), reducing the price of health services (102), reducing the price of medical tests (73), reducing the price of imaging services (65, 73), reducing the cost of services in markets with high price variation (73), and increasing the efficiency of medical imaging (109).

Three studies concluded that it had no impact on reducing the price of health services (33), reducing the price of visits (73), and reducing hospital costs (113). Additionally, three studies reported negative effects, such as increasing the number of services and total health costs per patient (96), reducing the technical efficiency of hospitals (109), and increasing the operational costs of hospitals (113).

In the market dimension, two studies reported positive effects, such as increased competition (65), an increased number of patients, and increased income for centers with price transparency (86). From the perspective of community empowerment, one study reported improved decision-making and choice of patients (65), but another study found no impact on consumer search (102). This could be due to the low price elasticity of health services, meaning that patients use more important indicators than the price of services for their choice. Additionally, the fact that patients are insured may reduce their motivation to search for cheaper prices. Finally, one study concluded that this transparency increased patient satisfaction (86).

4.10. Transparency of Medicine Prices

Three studies specifically addressed the transparency of medicine prices (70, 90, 112). In one case, transparency of wholesale medicine prices led to a decrease in the retail price of medicines (90). However, in two cases, the price of medicines did not decrease (70, 112).

4.11. Access to Personal Health Records

Fourteen studies addressed patients' access to their personal health records (20, 31, 39, 40, 50, 54, 58, 60, 80, 84, 85, 87, 100, 103). Two additional studies in this area were excluded due to being outdated (115, 116). Based on the definition of this study, access to personal health records does not align with "public disclosure" of information, as not all information is available to everyone; each person only has access to their personal information. However, this application of transparency was included in the study because it ultimately increased public access to information and empowered the community.

The most evaluated outcome of this application of transparency was in the field of empowerment and satisfaction of the community. Five studies reported that this transparency led to an increase in patients' knowledge of the details of diagnosis and treatment of their disease (20, 40, 58, 87, 100). Two studies reported improved patient decision-making in the treatment process (39, 40), and three studies reported better self-care management for patients (39, 40, 85). Additionally, two studies stated increased access to information for patients at the required time and place (39, 87). However, two studies stated that it had no impact on empowerment and improvement of patient self-care (31, 54), and in one case, misinterpretation of information by patients was reported (80).

In the field of satisfaction and patient relations, three studies reported improved satisfaction and experience of patients (20, 39, 40), and three studies reported improved relationships between patients and caregivers (20, 39, 40). One concern was the increase in patient anxiety, but one study reported the creation of a sense of confidence and security for patients (20), one study reported reduced emotional distress of patients (40), and four studies reported no impact on increasing anxiety and worry of patients (31, 39, 40, 87). However, one study reported no impact on patient satisfaction (31), and one study reported a negative impact on the patient's relationship with the doctor (80).

The impact of this application on the quality of services was also examined in a study, which reported no impact on patient mortality and on reducing readmission (84). In the field of efficiency and access, two studies reported increased use of services (50), including more use of screening (103), and in one case, an adjustment in the use of services (60). However, one study stated that this transparency increased the workload of physicians to respond to patients (80). Finally, one study reported that this transparency improved the quality of data and medical records (85), and another study stated that this transparency had no significant adverse effects (31).

4.12. Reporting Prescriptions of Providers

Seven studies examined the transparency of prescriptions (42, 63, 66, 69, 74, 78, 107) and measured its outcomes on efficiency. Five cases reported improvement and adjustment of prescriptions (66, 78), including reducing unnecessary medicine prescriptions (63, 74) and improving and adjusting the use of services in nursing homes and elderly care (107). One study showed that although transparency through the website had no impact on reducing cesarean sections, the media and press were effective in reducing the cesarean rate (42). Another study reported no impact on prescribing unnecessary imaging (69).

4.13. Other Applications

Several studies examined transparency in specific applications and their outcomes. One study addressed the transparency of coverage and benefits of health insurance, highlighting outcomes such as improved decision-making and choice of patients and increased price elasticity of demand for health insurance (22). Another study focused on the transparency of industry payments to

physicians, reporting that people were informed about the possibility of accessing information on industry payments to physicians, but this information did not lead to an increase in people's awareness of industry payments to their own physicians (95).

One study addressed the transparency of the number of health workers, reporting a reduction in the patient-to-nurse ratio and improved quality and safety of care (91). Another study examined the public reporting of waiting times for surgery, stating that this transparency improved decision-making and choice of patients but had no impact on reducing patient waiting times (111).

One study addressed the transparency of health statistics and reported no impact on health service coverage (92). Another study, which referred to the public disclosure of open data in the health sector using a qualitative method, reported outcomes such as improving quality and safety of care, reducing the price of health services, increasing the quality of data, improving efficiency, evidence-based and data-driven improvements, and empowering the community through improving health literacy and promoting patient participation (13). Figures 4 and 5 provide a summary of applications and consequences of transparency in the health system.

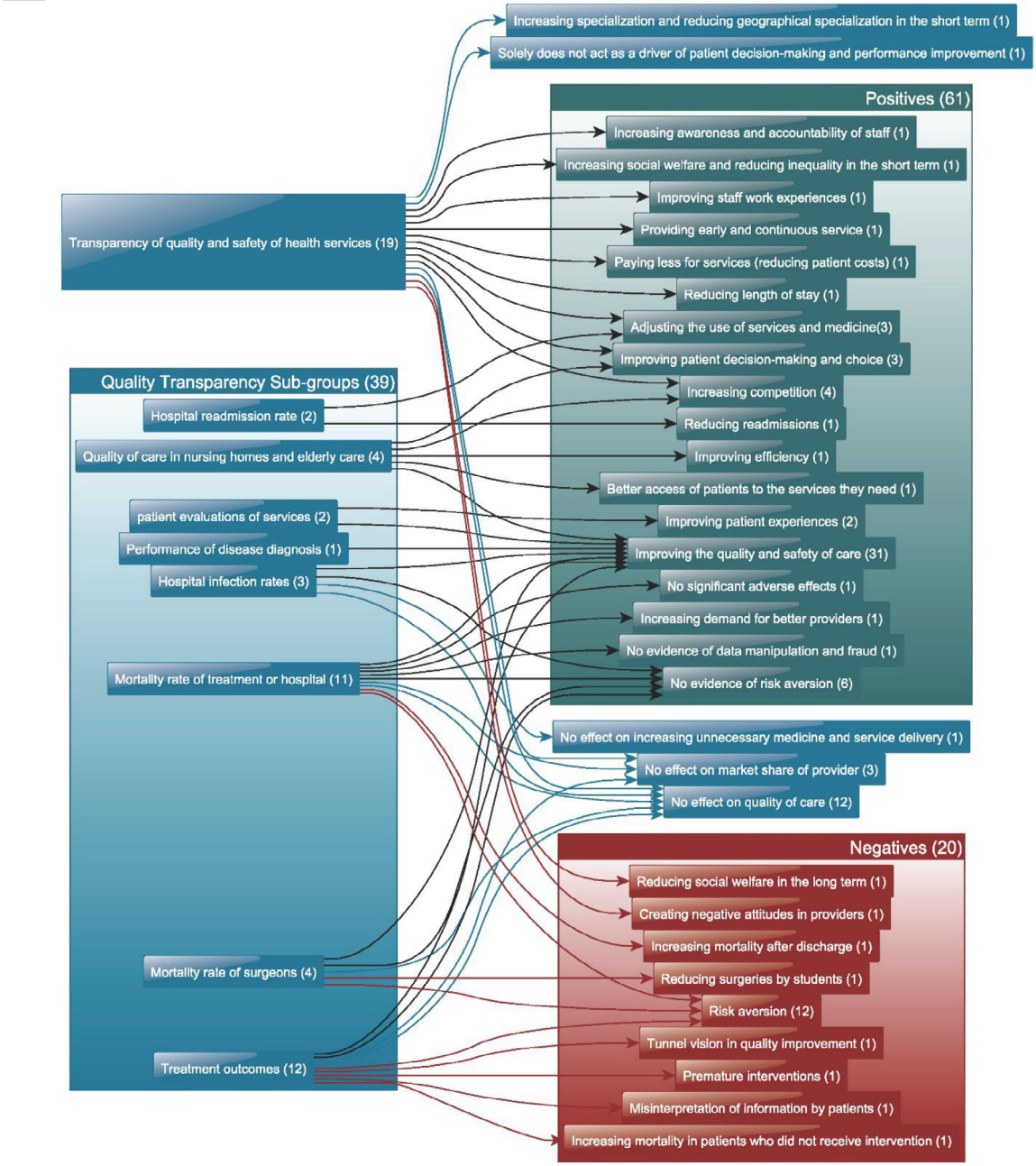

Figure 4. Summary of effects of healthcare quality and safety transparency

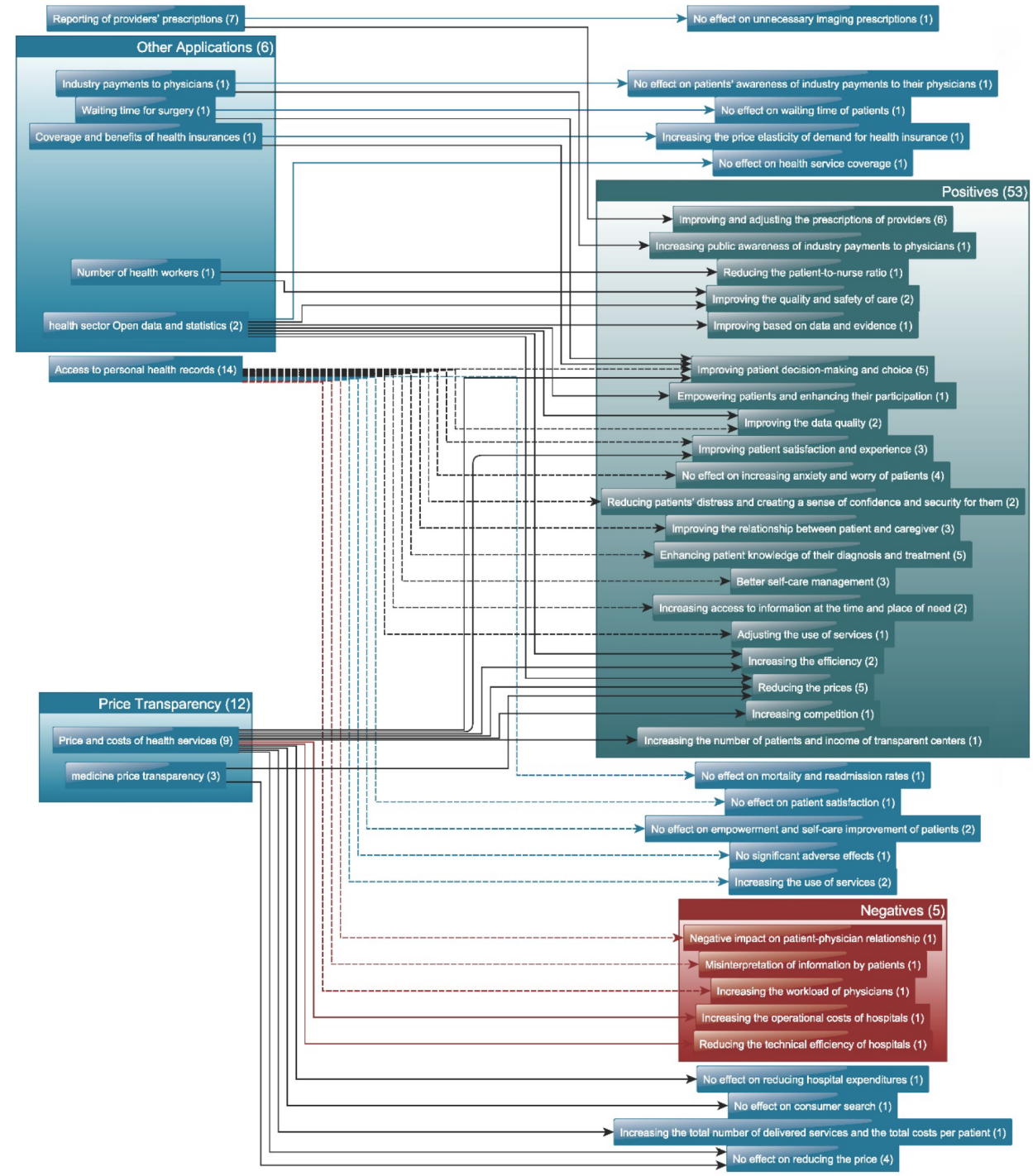

Figure 5. Summary of effects of other health system transparency applications

5. Discussion

This study was conducted with the aim of exploring the applications and outcomes of transparency in the health system using a scoping review method. Ninety-seven studies were identified since 1994, addressing applications of transparency in the quality and safety of health services [58 cases], transparency of price and cost of medicines and health services [12], access to personal health records [14], public reporting of prescriptions and health services [7], transparency of industry payments to physicians [1], transparency of coverage and benefits of health insurance [1], waiting time for surgery [1], number of health workers [1], and statistics and open data of the health sector [2].

Among the outcomes, 123 positive outcomes were categorized into groups: Improving quality and safety of care [45], improving efficiency and reducing costs [24], empowering the community and improving literacy and participation and choice of patients [20], improving satisfaction and relationships of patients and staff [12], increasing competition and market regulation [11], increasing access to services and information [7], promoting health, welfare, and social justice [2], and increasing the quality of records and data [2]. Additionally, fourteen cases reported no negative impact, including no impact on risk aversion of health service providers [7], no impact on increasing anxiety and worry of patients [4], no impact on data fabrication and fraud [1], and no significant adverse effects [2].

Thirty-seven cases of no positive impact were reported, including no impact on quality and safety of care [16], efficiency and cost reduction [9], empowerment of the community [6], market share of providers [3], increased coverage of services and reduced waiting time [2], and patient satisfaction [1]. Thirty-four negative outcomes were also reported, primarily involving risk aversion and reduced service delivery to high-risk individuals [16], followed by negative impact on service quality [6], increased costs and reduced efficiency [4], negative impact on staff satisfaction and their relationships with patients [2], misinterpretation of information by patients [2], data fraud, data fabrication, and incorrect coding [1], reduced social welfare in the long run [1], increased price elasticity of demand for health insurance [1], and increased specialization [1].

In other review studies, 10 cases examined the outcomes of transparency of performance and quality of health services (10, 11, 15, 16, 153, 155, 157, 160, 161, 163), 5 cases examined the outcomes of access to personal health records (152, 154, 156, 158, 159), and one case examined the effects of transparency of the price of health services (162). The results of these studies also showed similar outcomes to the present study and provided a moderate level of evidence to support the role of public reporting of performance in stimulating quality improvement activities, consumer choice, improved clinical outcomes, improved experience and satisfaction of patients, reduced costs, and other positive outcomes. Additionally, similar unwanted outcomes to those reported in this study existed.

These differences in the outcomes of public reporting in different regions may be related to the type of indicators, the level of data reported, the method of publication, the infrastructure of the health system, and the economic and cultural contexts. However, the present study covered a wider range of applications of transparency in the health system and aimed to provide an overview of the set of applications and outcomes existing in health systems.

5.1. Conclusions

The results of this study show that transparency in health systems has been broadly applied and has yielded numerous positive outcomes, particularly in improving care quality, efficiency, and patient empowerment. Despite these benefits, transparency also presents challenges, including risk aversion among providers and potential misinterpretation of information by patients. The impact of transparency varies based on several factors, including the type of data reported, publication methods, and regional economic and cultural contexts. Therefore, to improve transparency in each of its applications in health systems, sufficient attention should be paid to the set of its outcomes. Transparency should be implemented in a principled and accurate manner to maximize its positive outcomes and control its unwanted outcomes as much as possible (164-166).

5.2. Policy Recommendations

1. Implement targeted transparency measures: Focus on areas with proven positive outcomes, such as quality and safety of care, to leverage transparency for the greatest benefit.
2. Educate stakeholders: Provide training for health service providers and patients to correctly interpret transparency data, reducing misinterpretation and anxiety.
3. Customize transparency initiatives: Tailor transparency efforts to regional characteristics, ensuring alignment with local health system infrastructure and cultural norms.
4. Monitor and evaluate impact: Continuously assess the effects of transparency measures to identify unintended negative outcomes and adjust strategies accordingly.
5. Promote principled transparency: Ensure that transparency is implemented ethically and accurately, focusing on maximizing positive outcomes and minimizing potential harms.

The most important stakeholders for these policy recommendations include healthcare providers, patients, policymakers, health insurances, and regional health authorities. Healthcare providers and patients are directly impacted by transparency measures and require education to interpret data correctly. Policymakers and health insurances play a crucial role in implementing and customizing transparency initiatives to fit local contexts. Regional health authorities are essential for monitoring and evaluating the impact of these measures, ensuring they are ethically and accurately applied to maximize benefits and minimize harms.

These recommendations aim to enhance the effectiveness of transparency in health systems while mitigating any adverse effects. By adopting a principled approach, policymakers can ensure that transparency serves as a tool for improvement rather than a source of contention.

5.3. Limitations

Despite the relative comprehensiveness of this research, some applications of transparency and its outcomes may have been missed. For example, the role of transparency in controlling corruption in health systems, decision-

making and policy-making, increasing political accountability, financial discipline, and other similar issues were not found in the studies. One possible reason may be that these applications have been generally discussed in topics related to public administration and management, and searching for them specifically within the health system did not yield results. Therefore, it is suggested that scientists and policymakers in this field also consider other applications and outcomes of transparency in health systems.

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Conflict of Interests: The authors had no conflict of interest in this study.

Data Reproducibility: The dataset presented in the study is available on request from the corresponding author during submission or after publication.

Ethical Approval: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. The study was approved by the institutional ethics board of Iran University of Medical Sciences (No.: IR.IUMS.REC.1400.1170)

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