Network Governance in Healthcare: A Systematic Literature Review

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Abstract: The typical structure of the healthcare sector involves (specialist) intertwined practices co-occurring in formal or informal networks. These practices must answer to the concerns and needs of all related stakeholders. Multimorbidity and the need to share knowledge for scientific development are among the driving factors for collaboration in healthcare. To establish and keep up a permanent collaborative link, it takes effort and understanding of the network characteristics that must be governed. It is not hard to find practices of Network Governance (NG) in a variety of industries. Still, there is a lack of insight in this subject, including knowledge on how to establish and maintain an effective healthcare network. Consequently, this study’s research question is: How is network governance organized in the healthcare sector? A systematic literature study was performed to select 80 NG articles. Based on these publications the characteristics of NG are made explicit. The findings demonstrate that combinations of governance style (relational versus contractual governance) and governance structure (lead versus shared governance) lead to different network dynamics. Furthermore, the results show that in order to comprehend how networks in the healthcare sector emerge and can be regulated, it is vital to understand the current network type. Additionally, it informs us of the governing factors.

Keywords: Network governance, Healthcare, Systematic literature review, Network characteristics

1. Introduction

Healthcare is organized as a dynamic network of multiple specialists that work together to provide the best care (Grit and Dolfsma, 2002; Cebul et al., 2008). The best healthcare is considered accessible, affordable and of high quality for everyone (OECD, 2019). Providing the best possible care is a complex task that can only be accomplished by working together (Glimmerveen et al., 2020). To provide the best healthcare and achieve a more uniform approach across the sector, there is a growing desire for more integrated healthcare (Minkman, 2017).

As a result, government is proposing several policy changes in Dutch long-term healthcare, with the goal of more actively governing the healthcare networks in terms of regulating competition and cooperation amongst healthcare stakeholders (Ministry of Finance, 2020). This is important because the Dutch population is aging and as a result, the demand for healthcare and the shortage of personnel in the care sector are both increasing (CPB, 2019, 2020, 2021). In addition, healthcare costs are increasing rapidly across OECD countries and is expected to grow more than the economy, increasing the pressure on the healthcare system (Rouzet et al., 2019). This highlights the need for more control over the healthcare network, also known as Network Governance (NG).

A network is a consortium made out of three or more legally autonomous organizations that interact to accomplish individual as well as collective objectives (Provan and Kenis, 2008). According to Agranoff and McGuire (2001), a network is a multiorganizational arrangement used to solve problems that cannot be solved by one organization. A long-term partnership between intersectoral, governmental, and non-profit organizations makes up a network (McGuire and Agranoff, 2011). NG is defined by Jones et al. (1997) as ‘a select, persistent, and structured set of autonomous firms (as well as nonprofit agencies) engaged in creating products or services based on implicit and open-ended contracts to adapt to environmental contingencies and to coordinate and safeguard exchanges. These contracts are socially rather than legally enforceable.’ Isett et al. (2011, p. i158) simplify NG as ‘entities that fuse collaborative public goods and service provision with collective policymaking’. Provan and Kenis (2008) state that the collective policymaking is based on the principles of trust, reciprocity, negotiation, and mutual interdependence among actors.

Network Governance is used in a variety of industries, including fashion, finance, and healthcare (Jones, Hesterly and Borgatti, 1997) and the concept of NG shares similarities to other governance concepts such as collaborative governance (Wang & Ran, 2021). Although NG has been used in the field of healthcare for some time, there is still a lack of knowledge on the subject. More research is required, in particular on the essential characteristics that define the most effective form of governance, as well as on the precise methodology used to operationalize each mode of governance (Wegner, Teixeira and Verschoore, 2019). That is why we conducted a systematic literature review on NG in healthcare with the following research question in mind: How is network governance organized in the healthcare sector?
In the remainder of this paper, the research method used is discussed, followed by the results of our study. After the results, the findings are examined in more depth, and limitations are described. The final section presents the conclusions and the research agenda that was drawn up.

2. Method

We conducted a systematic literature review (SLR) to find out how NG is evolving in the healthcare sector. A SLR helps to locate the available (international) evidence, confirms current practices, tackles variations, and identifies a potential research agenda (Munn et al., 2018). The time frame of our literature review spanned June 2021 to February 2023. The research process (figure 1), inclusion and exclusion criteria, and how various results are combined into a single story are discussed below in accordance with the PRISMA statement (Liberati et al., 2009) and the guidelines for SLRs in management and organizational studies (Denyer and Tranfield, 2009).

2.1 Identification

During the identification phase we worked together with an expert in SLRs. In this phase, potential keywords and meta phrases were derived from and evaluated against pertinent research papers. This exploratory study led to the creation of the following NG search string:

\[ S1 \text{TI} ((\text{network* OR collaborat* OR cooperat* OR multisector* OR intersector* OR partnership* OR (multi N1 stakeholder*)) ) N1 (governance* OR governing)) OR AB ((\text{network* OR collaborat* OR cooperat* OR multisector* OR intersector* OR partnership* OR (multi N1 stakeholder*)) ) N1 (governance* OR governing)) OR SU ((\text{network* OR collaborat* OR cooperat* OR multisector* OR intersector* OR partnership* OR (multi N1 stakeholder*)) ) N1 (governance* OR governing)) OR KW ((\text{network* OR collaborat* OR cooperat* OR multisector* OR intersector* OR partnership* OR (multi N1 stakeholder*)) ) N1 (governance* OR governing)) OR TX “lead organization-governed” OR TX “participant-governed” OR TX “network administrative organization” OR TI (health N1 (system OR sector) N1 governance) OR AB (health N1 (system OR sector) N1 governance) OR SU (health N1 (system OR sector) N1 governance) OR KW (health N1 (system OR sector) N1 governance) OR S1 OR S2 OR S3 OR S4 OR S5 \]

Figure 1: Research process

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Filters</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Search string for NG within healthcare</td>
<td>BSU (n=244); Cinahl (n=357); Embase (n=451); Medline (n=521); Psycinfo (n=418); Web Of Science (n=598); Google Scholar (n=200)</td>
</tr>
<tr>
<td>2.</td>
<td>Studies identified from databases (n=2789)</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Studies removed before screening: Duplicate studies removed (n=1189)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Studies removed for other reasons (n=0)</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Studies screened (n=1600)</td>
<td>Studies excluded (n=1357)</td>
</tr>
<tr>
<td>5.</td>
<td>Studies discovered (n=243)</td>
<td>Studies with conflicting reviews (n=179)</td>
</tr>
<tr>
<td>6.</td>
<td>Studies sought for retrieval (n=141)</td>
<td>Studies not retrieved (n=14)</td>
</tr>
<tr>
<td>7.</td>
<td>Citation mapping (n=127)</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Studies included via backward search (n=4)</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Studies excluded based on Citation map (n=51)</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Studies included in review (n=80)</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Find out the answers to the research questions</td>
<td></td>
</tr>
</tbody>
</table>
The search was carried out in seven databanks, yielding a total of 1600 studies after duplicate studies were excluded following the seven methods proposed by Bramer et al. (2016). The studies were entered into Rayyan and assigned to two senior researchers in the field of business and information management to minimize any researcher bias. Rayyan is a cloud-based platform that allows several users to examine literature simultaneously (Johnson and Phillips, 2018).

2.2 Screening

During the screening phase, each study’s keywords, abstract, and title were examined to ensure that the studies are relevant. To be taken into consideration, a study had to be valuable in addressing (at least) the study issue, have been published in a peer-reviewed journal, conference paper, or dissertation, and were written in the authors’ native language (Dutch, English, or German). As a result, 243 research studies were selected. Because there was initial dispute on the value of the studies in answering the research question, the researchers debated 179 of these papers. For example, the research of Park and Wilding (2014) makes no specific mention of how NG is organized in the healthcare sector, one of the reviewers therefore chose to ignore it. The other reviewer, on the other hand, decided to include it since its perspectives could be useful in addressing how NG could be organized. After debating these opposing perspectives, consensus was reached on each disputed article. In total, the eligibility phase included 141 studies.

2.3 Eligibility

When we began the eligibility phase, we found that the databases we used only included 127 complete paper versions of the research. The links between the articles were converted into Gephi-compatible files for Graph Edges and Nodes based on the quotes in the papers, titles, and authors using the Python script of Mass & Faler (2020). A backward search was carried out to identify any potentially overlooked relevant studies. The publications of the most selected authors, as well as the citations of the research in the largest citation clusters, were scanned for this purpose. As a result, four studies were added.

Following the backward search, the results were shown in a citation map. Gephi’s attempts were difficult to read.

Figure 2: Citation map

Therefore, the Gephi output was converted to VosViewer via Levallois’ web tool (2021). The citation map (figure 2) showed that not all studies are linked. We decided to focus our efforts on papers that cite one another. As a result, 80 articles were selected for this study. Upon request, a list of all chosen articles and their topics can be provided by the authors.

2.4 Included

The publications were imported into Atlas.ti (version 23.1.2.0), read, and coded to learn more about NG and the similarities and differences amongst the studies. The coding was carried out utilizing the open, axial, and selective coding methods proposed by Corbin and Strauss (1990).
The evolution of NG, the geographical research area, authors, topics, theoretical perspectives and method(s) used mentioned in the numerous studies were initially coded to provide a full overview of the selected studies. Then the content was used to open-code the potential NG characteristics. For instance Haarich (2018) noted some NG characteristics one of which is “Rules and behavior: Network and governance system performance depends not only on the quantifiable activities of the network but also on underlying conditions and intangible elements that make collaboration possible, such as trust, motivation, common norms and values.” As a result, the NG characteristic ‘rules and behavior’ was obtained.

Several similarities associations were observed after the first 20 to 25 articles. Therefore, existing codes were reused for comparable notes, or codes were completed to make them more usable. To obtain the answer to the research question, axial and selective coding methods were used to develop thematic maps in accordance with Braun and Clarke’s (2006) phases of thematic analysis.

3. Results

Figure 3 displays the distribution of the publication dates of the selected papers, broken down by year. This graph depicts an upward trend in publications up to 2020. 2020 shows a decline, which appears to be continuing in 2021. However, because the search was undertaken in the midst of 2021, the overall number for that year would almost certainly have to be raised upwards.

![Figure 3: Publishing date by geographical research area](image)

### 3.1 Main Authors

When identifying the main authors in the field of NG from this collection of studies, Provan from the University of Arizona stands out as the main contributor, particularly in the context of network effectiveness in long-term healthcare practices. Provan is an author or coauthor on seven of the eighty included studies. In addition to the primary contributor with the most publications, Jones et al. (1997) are the most frequently cited NG authors.

### 3.2 Topics

The selected articles cover a wide range of topics related to how a network is or can be effective, how a network should be managed, what influence various factors have within the network, such as culture, trust, communication, cooperation, relationships, and leadership, and how a network emerges and develops. The top three most mentioned topics are 1. NG effectiveness (16 studies), 2. Health system governance (8 studies) and 3. Network development and reorganization (6 studies).

### 3.3 Theoretical Perspectives

Several articles mention the writers’ theoretical perspective. Most NG publications appear to be founded on Transaction Cost Economics and Network Theory (table 1). Other theories addressed in the NG articles that were cited three or more times include Contingency Theory, Organization Theory, Resource Dependency Theory, Social Network Theory and Collaboration Life Cycle.
Table 1: Theories used

<table>
<thead>
<tr>
<th>Theory</th>
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<th>Theory</th>
<th>#</th>
<th>Theory</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Network Theory</td>
<td>6</td>
<td>Collaboration Life Cycle</td>
<td>3</td>
<td>Network Effectiveness</td>
<td>2</td>
</tr>
<tr>
<td>Transaction Cost Economics</td>
<td>6</td>
<td>Institutional Theory</td>
<td>3</td>
<td>Network Governance</td>
<td>2</td>
</tr>
<tr>
<td>Contingency Theory</td>
<td>5</td>
<td>Agency Theory</td>
<td>2</td>
<td>New Public Management</td>
<td>2</td>
</tr>
<tr>
<td>Organization Theory</td>
<td>5</td>
<td>Collaborative Governance</td>
<td>2</td>
<td>Political Science</td>
<td>2</td>
</tr>
<tr>
<td>Resource Dependency Theory</td>
<td>4</td>
<td>Configuration Theory</td>
<td>2</td>
<td>Principal-Agent Theory</td>
<td>2</td>
</tr>
<tr>
<td>Social Network Theory</td>
<td>4</td>
<td>Game Theory</td>
<td>2</td>
<td>Public Management</td>
<td>2</td>
</tr>
</tbody>
</table>

So, the majority of the theoretical perspectives applied in our selection of NG studies are formal (Transaction Cost Economics, Organization Theory, and Resource Dependency Theory), although the informal perspective (f.i. relational contracting theory) is just as important, if not more essential (Sydow, Müller-Seitz, and Provan, 2013).

3.4 Research Methods

A (multiple) case study methodology (n=18), (structured) literature review (n=15), a mixed method (n=12) and questionnaires (n=9) are the most often used research approaches (figure 4). When these findings are compared to Sanders' research onion (Saunders et al., 2019), it seems that the majority of the selected NG studies appear to be undertaken from an interpretivist and postmodernist standpoint.

Figure 4: Research methods

3.5 NG Categories

Based on 38 discovered NG definitions, eight main NG categories have been identified (table 2): the reason why the network exists (motive), the network's unity of being (shared identity), the social way participants are connected (relations), the formalities (rules and behavior), the formal way participants are connected (structure), the network's dimensions (such as size and age), the level of perspective, and finally the roles and competencies. A word count screening is used to analyze the definitions. Table 2 lists the terms that belong to each main NG category, and the total number of terms used in all of the 38 NG definitions is shown in parenthesis. The italicized words represent words with many spelling options. For instance, the word "collaborate" appears seven times since it combines the words "collaborate," "collaborations," "collaborate," and "collaborative."
Table 2: Network Governance categories

<table>
<thead>
<tr>
<th>I. Motive</th>
<th>II. Shared identity</th>
<th>III. Relations</th>
<th>IV. Rules and behavior</th>
<th>V. Structure</th>
<th>VI. Dimensions</th>
<th>VII. Perspective</th>
<th>VIII. Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>contingencies (5)</td>
<td>collaborate (7)</td>
<td>exchange (7)</td>
<td>contract (10)</td>
<td>structure (12)</td>
<td>set (7)</td>
<td>organizations (12)</td>
<td>coordinate (10)</td>
</tr>
<tr>
<td>adapt (6)</td>
<td>involve (9)</td>
<td>relationships (5)</td>
<td>binding (4)</td>
<td>autonomous (8)</td>
<td>actors (6)</td>
<td>firms (7)</td>
<td>safeguard (5)</td>
</tr>
<tr>
<td>implicit (5)</td>
<td>persistent (5)</td>
<td>open-ended (5)</td>
<td>legal (6)</td>
<td>formal (3)</td>
<td>select (3)</td>
<td>agencies (4)</td>
<td>action (4)</td>
</tr>
<tr>
<td>goals (3)</td>
<td>shared (4)</td>
<td>engaged (4)</td>
<td>process (4)</td>
<td>horizontal (3)</td>
<td></td>
<td>institutions (3)</td>
<td>creating (4)</td>
</tr>
<tr>
<td>products (4)</td>
<td>together (4)</td>
<td>different (4)</td>
<td></td>
<td></td>
<td></td>
<td>environmental (5)</td>
<td>decision (4)</td>
</tr>
<tr>
<td>services (4)</td>
<td>collective (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>public (5)</td>
<td>making (4)</td>
</tr>
<tr>
<td>resources (3)</td>
<td>socially (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>markets (3)</td>
<td>control (3)</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>explain (3)</td>
</tr>
</tbody>
</table>

3.6 NG Characteristics

With open coding, 55 unique NG characteristics were extracted from the selected studies. Following axial coding, 35 NG characteristics remained, which could all be classified into the eight main NG categories (selective coding). Figure 5 displays the NG characteristics discovered in the studies. Each characteristic is classified in the relating NG category. For instance, Motive is depicted at the top of the figure. This might be an effort to adapt fast to the environmental Contingencies (3), a Wicked problem (4), or a shared objective, such as Sustainability (7), or Performance (8).

Figure 5: NG characteristics

The other characteristics that greatly influence how a network is organized and governed, are situated around the motive. We divided all characteristics into three governance styles:
1. Informal governance style characteristics (colored light gray), such as a shared identity as well as different types of relationships. This is in line with Relational Contracting Theory (Relational Governance).

2. Formal governance style characteristics (colored dark gray), such as the establishment of rules and behavior and structure. This is in line with the ideas of Transaction Cost Economics (Contractual Governance).

3. Characteristics associated with both governance styles, such as the required competencies, network dimensions and perspective.

4. Discussion and Limitations

In addition to our classification of governance styles, a clear connection has also been drawn with the governance structure of the network. The most cited source in this context is Provan and Kenis (2008). They came up with three distinct structures for effective NG. One network is controlled from a lead governance structure and the other network has a much more shared governance structure. Various intermediate forms are mentioned in the articles, the most well-known being the Network Administrative Organization (NAO) structure.

According to these findings, the governance style (relational versus contractual governance) and governance structure (lead versus shared governance) are two key NG characteristics. These could be represented by axes. In figure 6, the axis were merged to form a matrix.

![Figure 6: Network Governance matrix](image)

Eight articles have addressed the emergence of healthcare networks. Three articles (Cristofoli et al., 2019; Daugbjerg & Fawcett, 2017; Sørensen & Torfing, 2017) state that a network emerges in the upper right corner. In this corner the network is governed by one lead party and the appointments are fixed in contracts. A supply chain could be an example for this network type.

According to Mitterlecher (2018) a network initially emerges without any form of governance and then transforms into a network where one or more nodes are given responsibility for specific tasks which are more or less contracted. This can be attributed to the two network quadrants at the bottom. Networks positioned to the lower right quadrant are networks where rules and behavior are fixed in contracts but every organization is independent. An example for this quadrant is a knowledge consortium conducting research which is funded via subsidies. Networks in the lower left corner consist of autonomic organizations, with no interest to regulate the collaboration. An example of these kind of networks is a learning community.

A relational strategy is described by Johnston et al. (2016), Cristofoli et al. (2019), and Warner & Gould (2009), in which the bonding activities are predominately carried out by one party in control. The network will prosper by gradually changing from being a trigger to a supporter. These networks place less emphasis on contracts and are more concerned with bringing relevant organizations to the table, such as local or national governments (political community).

According to Dagnino et al. (2016), a network emerges under the direction of one party. Some networks will start to form on their own as they concentrate on forging the correct partnerships. Others are more concerned with becoming structured by establishing guidelines and standards.

Thus, a network is established by a single party, as evidenced by seven out of the eight articles. Yet one study (Mitterlecher, 2018) found a network that emerged without any governance structure. There are no studies in
our selection describing the situation in which the realization of the regulatory element should be prioritized, or priority should be given to the relational cooperation components.

Although a substantial amount of the structurally selected articles served as the foundation for these findings, there are several limitations that must be acknowledged. First, the collection of articles exclusively includes works from English-language sources. Foreign language papers were not included because the reviewers would not be able to read and understand them correctly. This might account for the lack of Asian and African studies. Second, the search term is specific to research in the field of healthcare. Therefore, it is advised to use caution when extrapolating the results to other contexts, even though our final selection of studies also contains some articles conducted in other contexts than healthcare. Third, rather than being based on the chosen studies, the examples provided for each quadrant are based on personal experiences. So, we have no proof that a supply chain would always emerge and develop in the upper right quadrant.

5. Conclusion and Research Agenda

The central topic of this research was to know how network governance is organized within the healthcare sector.

With a systematic literature search we selected 80 studies that helped us identify 35 NG characteristics which we have classified in eight main NG categories: motive, shared identity, relations, rules and behavior, structure, dimensions, perspective, and competencies. Based on our findings the governance style and governance structure seem to be the key NG characteristics. With the focus on these key characteristics, we were able to divide NG into four governance quadrants. Furthermore, our findings demonstrate that healthcare networks emerge in any of the four quadrants, with a preference for networks in which a single organization takes on a leading role within the network.

These insights are useful for establishing healthcare networks. However, certain issues remain unresolved that would be helpful for governing a network. For instance, it is still unclear if the initial motivation for a healthcare network persists over time or changes. Or, as previously mentioned, the examples provided for each quadrant are based on personal experiences and it is unclear whether a network stays in a single quadrant. For example, there is no proof that a supply chain is always situated in the upper right quadrant. We are aware from personal experience that a supply chain might also start in the upper left quadrant and move toward other quadrants. This potential development will affect NG. Therefore, we suggest future research into:

- The relationship between the motive and the quadrant from which the network emerges.
- The evolution of network motives over time.
- Examining the four NG quadrants to see how networks develop over time.

Acknowledgements

We would like to acknowledge Pelgrim, T., Tamrouti, R. and Bijsterveld, H. for their commitment and contribution to this research project.

References


