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Knowledge management in the care for people with intellectual disabilities during the COVID-19 pandemic

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Abstract

The study aimed to gain insight into knowledge management in the intellectual disabilities (ID) care sector during the COVID-19 pandemic. We explored and described how knowledge producers, intermediaries, and knowledge users experienced knowledge management during this crisis situation, the responses to the specific knowledge needs in the ID-care sector, and changes in roles and collaboration during this period. Twenty-five individual in-depth semi-structured interviews were conducted with knowledge producers, intermediaries, and knowledge users in the Dutch ID-care sector. An inductive thematic analysis was conducted. Three key themes were identified: (1) knowledge needs during the COVID-19 pandemic, (2) experiences with knowledge management, and (3) roles and collaboration in knowledge management. There was an urgent need for specific ID-related knowledge and how to translate available evidence for the general population into ID-care settings. In knowledge management, the focus was on knowledge production and exchange, with validation and application receiving less attention. Within stakeholder groups, collaboration and knowledge exchange were intensified by existing or new knowledge infrastructures. Between stakeholder groups, knowledge producers and users created short lines to exchange needs and produce knowledge. This paper provides unique insights into knowledge management in the Dutch ID-care sector during the COVID-19 pandemic. Implications are discussed to improve future knowledge management processes. Support with knowledge validation and local knowledge infrastructures (complementary to centralized national knowledge infrastructures) help to assess the reliability and usefulness of knowledge and improve its use in practice during future pandemic-related crisis situations.

1 | INTRODUCTION

Knowledge management takes place in five phases which are regarded as dynamic and complex processes that are highly dependent on their broad, multi-actor context (Mareeuw et al., 2015).

The five phases of knowledge management include (1) knowledge production (producing novel and useful knowledge), (2) knowledge validation (reflecting on knowledge and evaluating its effectiveness and usefulness), (3) knowledge presentation (how knowledge is displayed), (4) knowledge exchange (disseminating and sharing

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knowledge), and (5) knowledge application (how knowledge is used) (Bhatt, 2001). Knowledge is exchanged through systemic interactions in which multiple actions happen simultaneously (Caron-Flinterman et al., 2007; Geels, 2004; Greenhalgh & Stones, 2010; Lomas, 2007; Smith, 2010; Smits, 2002; Ward et al., 2009). In crisis situations in particular, it is essential that the knowledge and information flow is structured in such a way that it ensures timely, adequate, and meaningful exchange between relevant actors (Pan et al., 2012). The manifestation of the COVID-19 pandemic in the disability sector provides an example situation to investigate how knowledge was produced, managed, and shared between organizations, and to identify lessons learned. Therefore, we explored and described the ways in which different stakeholder groups (e.g., knowledge producers, intermediaries, and knowledge users) in the intellectual disability (ID) care sector experienced knowledge management during this crisis situation, whether their roles and collaboration changed, and the responses to the specific knowledge needs in the ID care sector.

During the COVID-19 pandemic, the urgent need for new knowledge and scientific evidence to support decision-making and everyday practice was acute in ID care organizations. For example, on treatment and infection prevention (Kersten et al., 2023). People in long-term care, such as people with ID, are especially vulnerable to COVID-19 as a result of chronic health problems (e.g., obesity, diabetes, cardiovascular, and respiratory problems) that can lead to an increased risk of infection and mortality (de Winter et al., 2012; Fang et al., 2020; Flygare Wallen et al., 2018; Hosking et al., 2016; Hsieh et al., 2014; McCarron et al., 2013; Sayers et al., 2013; World Health Organization, 2020a). People with ID often depend on support from their social environment or organizations offering a wide range of services, including supported living arrangements, employment support, or 24-h staffed residential care facilities (Schalock et al., 2021). Restrictions such as social distancing and lockdowns were put in place to limit infection and transmission risks. However, these measures were often impractical in daily care provisions and daycare activities given the inevitably close contact (e.g., when living in residential group homes) (Balogh et al., 2016; Courtenay & Perera, 2020; Krahn et al., 2006). At the start of the pandemic, little was known about the impact of COVID-19 on the health and care of people with ID, causing uncertainty about how the Dutch ID-care sector should respond appropriately (Cuypers et al., 2020). A myriad of interorganizational knowledge production and sharing activities were set up rapidly and new collaborations emerged (Embregts et al., 2020), influencing knowledge sharing and application compared to prior the pandemic (Kersten et al., 2023).

In the Dutch ID-care sector, knowledge processes are part of a multidisciplinary system of different knowledge bases (Kersten et al., 2023). From a knowledge management perspective, actors can be roughly divided into three stakeholder groups: knowledge producers, intermediaries, and knowledge users (Mareeuw et al., 2015; Meyer, 2010; Smedlund, 2006). The knowledge producers (i.e., researchers) develop, weigh, and disseminate (scientific) knowledge. The intermediaries translate knowledge into practice, develop information products, and ensure the availability of the products to the end-users. For example, policymakers or providers of online

platforms implement or disseminate (scientific) knowledge and information products about the health and care of people with ID. Throughout the COVID-19 pandemic, the intermediaries also played a significant role as knowledge brokers in what was referred to as the “infodemic.” This was a challenge, as it required the continuous translation and updating of available information, while also involving the risk of misinformation arising from this process (Cegarra-Navarro et al., 2021; Eysenbach, 2020; Hartley & Vu, 2020; Martini et al., 2022; World Health Organization, 2020b). The knowledge users are the processors and users of the provided knowledge, such as ID physicians, behavioral experts, and daily caregivers.

Previous research showed that knowledge does not always reach knowledge users, nor do knowledge producers always conduct research based on practical knowledge needs (Mareeuw et al., 2015). The three stakeholder groups often produce or use knowledge without interacting with each other, and limited responsibility is taken regarding the facilitation of active knowledge exchange (Mareeuw et al., 2015). In addition, the roles of knowledge producers, intermediaries, and knowledge users in knowledge management are not strictly separated, and the role that actors assign to themselves can differ from the role that others assign to them (Leeuwis et al., 2004; Mareeuw et al., 2015; Ravensbergen et al., 2003). It remains unknown whether these tensions between and roles of the different stakeholder groups in knowledge management hold during a health crisis like the COVID-19 pandemic. However, knowledge management is essential to support care for people with ID to account for their particular vulnerability, especially during the pandemic. To explore how the stakeholder groups executed their roles in knowledge management in the ID care sector during the COVID-19 pandemic, this study used a conceptual framework incorporating the five phases of knowledge management (i.e., knowledge production, validation, presentation, exchange, and application) and three stakeholder groups (e.g., knowledge producers, intermediaries, and knowledge users). Thereby, the study aimed to create more insight into the knowledge management processes in the ID care sector and to identify opportunities for improvement, both inside and outside times of crisis.

2 | METHODS

2.1 | Study design

Individual in-depth semi-structured interviews were conducted with knowledge producers, intermediaries, and knowledge users between June and September 2020. The study received ethical approval from the research ethics committee of Radboud university and medical center (registration number 2020-6657).

2.2 | Study setting

The Dutch ID-care sector is part of a large healthcare system consisting of healthcare users, service providers, professional groups,

collaborative partnerships, health insurers, the healthcare authority, and the national government. At the organizational level, there are approximately 170 service organizations across the Netherlands for people with mild to profound ID. Direct care and support are provided by professionals from multiple disciplines such as care staff, psychologists, and (para)medics (Kersten et al., 2023). Several academic research departments and care-provider organizations set up partnerships in Academic Collaboratives (ACs). The ACs intensify the collaboration between research and practice, and improve the application and implementation of knowledge (Greenhalgh et al., 2004; Kaplan et al., 2010; Kersten et al., 2022). Currently, there are eight ACs that are united in a national association of ACs (Embregts et al., 2020). The current study is conducted by one of the ACs in collaboration with other AC-partners.

2.3 | Study sample

In several brainstorming sessions, the authors (MN, KB, JN, GL, HN, and PE) identified key stakeholders from each subgroup (knowledge producers, intermediaries, and knowledge users). Knowledge users are the largest and most heterogeneous group in the sector and include managers, ID physicians, health and care professionals, and daily caregivers. Because of the size and heterogeneity of this stakeholder group, a larger sample was included in this study. Potential participants ($N = 25$) were contacted by email (purposive sampling). Next, each confirmed participant was asked to consider other potential participants to include in the research and to provide their contact details after consent was given by the person concerned (snowball sampling). In this way, 12 additional participants were identified and asked to participate in the study. In total, 37 potential participants were identified and approached by the main author (MN). The overall response rate was 68%, resulting in 25 participants: 5 knowledge producers, 4 intermediaries, and 16 knowledge users from 29 organizations (Table 1). Some participants worked for multiple organizations in different roles. For example, a participant worked as an ID physician at an ID-care organization (knowledge user) and as a researcher at an academic institution (knowledge producer). These participants were asked to join the

TABLE 1 Description of participants per stakeholder subgroup.

Subgroup	Participants
Knowledge producers	Participants connected to universities, universities of applied sciences, Academic Collaboratives in ID care and affiliated with the national Association of Academic Collaboratives Intellectual Disabilities
Intermediaries	Participants connected to knowledge and policy institutes with an intermediary role; healthcare provider policy organization, and the Ministry of Public Health, Welfare and Sport
Knowledge users	Participants connected to ID-care organizations: managers, ID physicians, behavioral experts, daily caregivers, and supervisors

interview for the stakeholder group for which they had been approached. Reasons for non-participation related primarily to lack of time ($N = 4$) or interest in participation (4), or was not explained (4).

2.4 | Study procedure

The interview guide (Table A1) included topics concerning participants' experiences within the five phases of knowledge management and specific COVID-19-related knowledge needs (Table 2). The pilot testing of the interview guide resulted in minor adjustments to improve clarity. Once participation was agreed and informed consent received, appointments were scheduled with the participants. The interviews were conducted online or by telephone by a trained researcher (MN or NB) and recorded and then transcribed verbatim. The transcripts were pseudonymized before analysis. The average interview length was 44 min. Data collection proceeded until no novel information was mentioned during the interviews within each stakeholder group, as this indicated data saturation. Because of the heterogeneity of knowledge users, data collection within this stakeholder group proceeded until data saturation was achieved within the different roles and positions in this stakeholder group (e.g., managers, ID physicians, and daily caregivers).

2.5 | Data analysis

The data were analyzed thematically, supported by the use of the software ATLAS.ti (version 8.4.20). An overview of the coding process

TABLE 2 Short overview of interview questions.

Phase of knowledge management	Interview question	Probing questions
1. Knowledge production	How are you/is your organization involved in producing knowledge about COVID-19?	<ul style="list-style-type: none"> • What is the main reason for this? • With whom do you collaborate?
2. Knowledge validation	How important is this knowledge for your organization?	<ul style="list-style-type: none"> • What factors play a role in this?
3. Knowledge presentation	What are your top three sources from which to seek and find information concerning COVID-19?	
4. Knowledge exchange	What knowledge about COVID-19 do you share with others?	
5. Knowledge application	If you need knowledge about COVID-19, what kind of knowledge do you need?	<ul style="list-style-type: none"> • What is the knowledge/information usually used for?

TABLE 3 Consecutive steps, actions, aims, and results of the coding process.

Step	Action	Aim	Result
1	Open coding of first three transcripts	Identifying relevant quotes and codes	First conceptual coding structure
2	Applying conceptual coding structure to seven transcripts	Discussing similarities and differences, merging duplicate codes	Finalized coding structure
3	Systematically applying coding structure to all data	Bottom-up coding of data	Fully coded data
4	Grouping of codes into broader categories relating to the research question	Identifying possible subthemes within each main theme	A taxonomy of main themes and possible subcategories
5	Discussing groups of codes relating to shared concepts	Identifying definite subthemes and their mutual relations within each main theme	Three main themes and their subthemes as presented in the results section and in Table B1

regarding the consecutive steps, aims, and results is presented in Table 2.3. First, all transcripts were read to gain familiarity with the data, and three authors (MN, JN, and KB) applied open coding to one transcript from each stakeholder group. Relevant quotes and codes were identified based on the aim of this study and discussed between the coders. Similarities and differences were discussed, resulting in a first conceptual coding structure. The coding structure was applied to seven transcripts by the main author (MN), of which three were coded independently by another coder (MB). The list of quotes and codes from this step was discussed by the two coders and two of the main authors (MN, MB, KB, and JN) comparing differences between codes until a consensus was reached. Next, similar and duplicate codes were merged, resulting in a finalized coding structure. This coding structure was systematically applied to all data by the main author (MN) until all transcripts were coded (Table 3).

The coded data were discussed by the research team's main authors (MN, KB, and JN) to identify overlap and connections between the codes. Next, codes were grouped into broader categories, for example codes concerning sources of knowledge sharing (first-order themes, e.g., Facebook, Instagram, Twitter, LinkedIn, and WhatsApp), were grouped in the code "Sources: external sources," which creates the second-order theme. Groups of codes that linked to shared concepts were then identified and discussed, such as topics of interest, knowledge production, and knowledge exchange (third-order themes). This analysis phase resulted in three main themes, which form the aggregate theoretical dimensions: (1) knowledge needs during COVID-19, (2) experiences with knowledge management, and (3) roles and collaboration in knowledge management. During the final step, subthemes within each theme were explicated as described in the results section. The subthemes within the second main theme—experiences with knowledge management—resembled the five phases of knowledge management, and these were used as subthemes (Bhatt, 2001). In Appendix B1, an overview of the data coding is presented.

3 | RESULTS

In general, the COVID-19 pandemic impacted participants' knowledge exchange and work context in multiple ways. The rapid changes in the

work environment and working conditions presented considerable challenges for knowledge producers, users, and intermediaries. There were similar and different experiences between the stakeholder groups; where relevant, these are discussed throughout the results sections. Quotes are translated from Dutch and used to illustrate the findings.

3.1 | Knowledge needs during COVID-19

The need for knowledge is a key element in the knowledge exchange process. The crisis situation and the changing work environment and working conditions influenced the knowledge needs of knowledge producers, intermediaries, and knowledge users. Unfamiliarity with the short- and long-term impact of COVID-19 caused a surge in the need for reliable knowledge and the desire to exchange knowledge rapidly. Data analysis resulted in two subthemes concerning knowledge needs: (1) the topics of interest and (2) the differences in knowledge needs between stakeholder groups and ways to deal with knowledge needs.

3.1.1 | Topics of interest

Knowledge needs concerning three key topics: (1) the virus itself, (2) changes in working conditions, and (3) the impact of COVID-19-related restrictions on clients' health and well-being.

Questions about the virus included the course of COVID-19 infections, the number of infections and mortality, the contagiousness of the virus, and COVID-19-related symptoms. Available knowledge and information addressed mainly the general population, and knowledge specifically translated to the situation of people with ID and their care settings was scarcely available:

But when it comes to people with intellectual disabilities... what do we really know about the risk of getting infected? Regarding the organization of care, is that the same or not? Or regarding people with intellectual disabilities who have certain rare diseases or

vulnerable conditions? What do we really know about the relationship between their comorbidities that they already have and COVID-19? [Knowledge producer 1]

The rapid change in the working conditions of participants involved in ID care resulted in knowledge needs to support decision-making in practice. This included the impact and practical challenges of restrictions, social distancing, care provision at a distance or online, visiting arrangements, use of protective equipment, lockdowns of group homes and residential facilities, testing and contact tracing, and the organization of care and local organizational policy. In addition, knowledge was needed about new ways of working, including working online, how to work at a distance from colleagues or clients, and how to provide social support to colleagues and employees coping with stress and mental problems:

How do you actually lead multiple teams and multiple organizations? If you have to do it all through this little screen or through email or chat or... Well, we've also set up all kinds of hangouts, chat rooms, and things like that to facilitate that. But also because it does a lot to employees, to people. Both with them personally, long boring days, not seeing colleagues anymore. But also in terms of meaning, of what is the point of it all? Especially in the first period. [Knowledge producer 2]

Nationally announced restrictions had a considerable impact on the ID-care sector and specifically on clients. This led to knowledge needs about dealing with anxiety and stress and how to adjust organizational policy while taking the specific vulnerability of people with ID into account:

It has been very distressing for our clients.... Of course, there was also fear among colleagues and family members. We also had to put more time and energy into making sure that, yes, at least for the clients, their time at home was as pleasant as possible. [Knowledge user 1]

This occurred at a time when only limited knowledge on the impact of COVID-19 on people with ID was available. ID-care organizations had to follow long-term care restrictions, which sometimes deviated from general population restrictions, and contradictions were difficult to deal with in practice for both clients and care givers:

Because after a week or 6-7, the entire neighborhood came back to life again while we had to continue to apply the restrictions. And that is very difficult when living in a house in the middle of the neighborhood and you see everyone doing everything and you are not allowed to do anything yourself. [Knowledge user 2]

In addition, specific ID-related knowledge about the impact got off to a slow start during the pandemic:

In particular, the elder-care sector was in the picture. The ID-care sector and mental health care, they were at the very back of the government's list. It even took some time for them to realize that those sectors existed too. They focused completely on the hospitals and then the general practitioners and then, a long time after that, we came into the picture as well. [Knowledge user 3]

3.1.2 | Differences between stakeholder groups

The need for knowledge differed between the three stakeholder groups. Knowledge users were on the frontline and needed clear, unambiguous, streamlined, and fast knowledge exchange to ensure that they could provide the best possible care for their clients and to justify and facilitate decision-making. There was a need for specific scientific research on COVID-19 in people with ID, visibility of local organizational policy including developments and restrictions within the care organization, and experiences and perspectives on the situation from other colleagues and clients, for example, to formulate treatment plans or policy:

The first three weeks, I needed clear information. I was treating people, while I didn't know at all what was going on. We needed much more advice there. Yes, I understand that there was little knowledge and information nationwide. But when questions were asked, I gradually needed to formulate our policy. [Knowledge user 4]

Intermediaries and knowledge producers felt an urgency to respond to knowledge users' knowledge needs as much and as quickly as possible by producing and exchanging COVID-19-related knowledge. However, intermediaries struggled with the selection, translation, and dissemination of COVID-19-related knowledge that became available over time and had to find ways of managing the knowledge flow to support ID-care organizations in their urgent knowledge needs:

This includes a number of selection criteria, whereby we always need to consider the extent to which we continue to publish knowledge and information, especially in such a crisis situation. So that's an ongoing quest for us. Completeness versus equipping people with the best possible knowledge, so to say. And that's quite complicated, that's not...we are actually continuously investigating how to organize this knowledge flow by, for example, constantly tightening our selection criteria. [Intermediary 1]

Knowledge producers identified knowledge gaps regarding people with ID and their specific care settings (e.g., the impact of COVID-19 on the ID population). They were aware that this gap could not be easily filled because even knowledge about the general population was scarcely available. They focused on which specific knowledge needs could be answered in the short term and which questions required more time:

It also came across quite clearly that, in many areas, information was simply not available. So, then you could act with a kind of experienced-based knowledge, but also yes... well the need for follow-up research. And that's where we as an Academic Collaborative were asking daily care givers and family members, hey, in which situations would you have liked to receive support? [Knowledge producer 3]

In addition, knowledge producers needed information on how to conduct research from a distance, safeguard ongoing data collection, and deal with challenges in face-to-face data collection. For example, in research projects in which knowledge producers and users were collaborating, knowledge users had to focus on their care responsibilities and were not able to participate in research activities anymore.

3.2 | Experiences with knowledge management

Experiences with knowledge management covered all five phases of knowledge management: knowledge production, validation, presentation, exchange, and application. The sections below address each phase separately.

3.2.1 | Knowledge production

All three stakeholder groups were involved in knowledge production in (multidisciplinary) collaborations between colleagues from their own organizations and/or external organizations. Knowledge production was focused primarily on COVID-19. Knowledge producers were engaged mainly in the production of scientific knowledge, such as COVID-19-related data collection, rapid reviews, and (scientific) publications to provide scientifically based information. They searched for ways to contribute to knowledge about COVID-19 and to support ID-care organizations in their knowledge needs. Knowledge producers struggled with the speed at which scientific research had to be conducted to meet the needs of knowledge users. Many new COVID-19-related research projects were launched by knowledge producers to provide scientifically based answers specific to people with ID. Knowledge producers became increasingly involved in translating and disseminating scientific knowledge in an accessible way during the pandemic. The crisis situation forced them to work even more closely with practice to respond to knowledge users' urgent needs. Scientific journals changed their publishing procedures

to allow faster publication of short reports and rapid reviews. Nevertheless, the publishing process was still experienced as too long. Intermediaries were involved in the dissemination and translation of (scientific) knowledge and made the available knowledge findable and accessible to knowledge users by creating accessible articles, fact-sheets and videos. In addition, they organized online learning communities, web portals, learning communities, and developed several screening surveys concerning COVID-19 in care organizations:

COVID-19 was, of course, a current affair like no other. It presented itself and we have dropped, so to speak, everything from our hands concerning other themes, specific activities, and target groups, and immediately started focusing completely on COVID-19. [Intermediary 1]

However, a lot of knowledge was being produced and disseminated multiple times. Because of the unfamiliarity of the situation, knowledge producers and intermediaries wanted to support knowledge users in their knowledge needs but were often unaware of the knowledge that was being produced elsewhere.

Knowledge users wanted to share their practical experiences and contribute to scientific processes. However, knowledge users did not have enough time to contribute to this kind of knowledge production given the demanding crisis situation and focus on the primary process of providing care. By contributing to COVID-19-related data collection and answering research questions in collaboration with knowledge users, producers, and intermediaries kept the knowledge users in mind, and knowledge users were involved in (scientific) knowledge production. In addition, knowledge users searched for ways to ensure that (other) care providers had access to knowledge to provide practice-based evidence by developing information products that supported organizational policy, such as protocols, visiting arrangements, and manuals about the use of personal protective equipment. The internal organization policy was often produced without exchanging knowledge with other care organizations:

At the organizational level, I don't think there is any exchange with other organizations on the design of their crisis structure or corona policy. [Knowledge user 4]

3.2.2 | Knowledge validation

The constant flow of knowledge made it difficult for all stakeholder groups to weigh and validate knowledge, and make decisions about its dissemination. Available knowledge often concerned the general population, and knowledge specifically translated to the situation of people with ID and their care settings was scarcely available. This caused all stakeholder groups to question the validity and applicability of available knowledge in ID-care settings. For knowledge users, it was especially difficult to find knowledge that had been evaluated

and adapted to the context of people with ID. Most knowledge users are not used to retrieving and validating knowledge themselves and are not always certain about how to translate the retrieved knowledge about the general population into practice in their own ID-care setting.

At the beginning, I found it very difficult... first it was, when it comes to the mask story, the mouth masks, first you had FFP2 masks and eventually we ended up with surgical masks. These were also sufficient, but how do you explain that to employees? [Knowledge user 5]

The speed at which knowledge was continuously exchanged and the enormous amount of available knowledge that was exchanged made it hard for knowledge users to stay up to date:

Previously, we also received a lot of information, but how should I put it nicely? We simply don't have the time to read through the entire intranet that's provided by the care organization. So, they can email us all kinds of things and exchange information, until people themselves are standing in front of the group and notice the time pressure that working with clients entails. [Knowledge user 1]

There was a need to exchange available knowledge more efficiently, identify clear frameworks in the provision and exchange of knowledge, and jointly assess the relevance of knowledge, so knowledge users could find knowledge easily, assess its usefulness, and apply it in practice. Regarding knowledge validation, it was unclear which stakeholder group was primarily responsible. Intermediaries maintained their usual guidelines and selection processes in knowledge validation and sharing, excluding knowledge derived from commercial sources:

We share knowledge that becomes publicly available. But of course, you also have all these commercial knowledge providers who also produce wonderful knowledge. But we don't share that. So, if there is a business model behind it, then in principle it is not for us to share. We don't want to become the platform for everyone who does something in return for payment, although it is completely legitimate, but we do not support that. [Intermediary 1]

Multiple knowledge-sharing initiatives existed, but the evidence behind the actual knowledge shared was not always clear. In addition, knowledge producers launched an online platform where knowledge users could submit their questions about COVID-19, which were rapidly and scientifically approached and answered by knowledge producers. If there was no scientific knowledge about the ID-related subject, new research projects were set up. This initiative was appreciated by knowledge users, but the scientifically substantiated

answers still often took (too) long and many questions were hard to answer based on existing scientific evidence.

3.2.3 | Knowledge presentation

Table 4 provides an overview of the multitude of knowledge sources consulted in the knowledge exchange process, ranked from top to bottom from most to least consulted. A distinction was made between sources consulted internally in the organization and those consulted externally. The externally consulted sources were subsequently divided into sector-specific sources and general sources. General sources, including national press conferences and knowledge from the National Institute for Public Health and the Environment, were consulted most. In addition, existing knowledge networks and personal contacts, including consultation with colleagues or email contact, were important sources consulted during the pandemic:

Still, mostly through connections that you've already had. So, through consultation with the behavior expert, the manager, a little bit with common sense, and through connections I have outside of my own homes. Yes, mostly by sparring with people, people from within the organization. [Knowledge user 6]

TABLE 4 Consulted sources.

Internal sources	External sources	
	ID-sector specific	General
Colleagues	Healthcare provider policy organization	Government sources
Intranet	Professional association ID	Traditional media
Local crisis management team (CMT)	Scientific research	Social media
Working experiences	Internet	Professional associations and organizations in general healthcare
Email	Online platform ID	Scientific research
Private contacts	Email	Internet
Care organization's client database	ID-care organizations	Elder-care sector
	Association Academic Collaboratives Intellectual Disabilities	
	Academic Collaboratives ID	

And of course, we were also informed by the care organizations. So, from practice through personal contacts. So, through the people from the Academic Collaborative who also work in practice, we heard a lot about how situations were like. [Knowledge producer 4]

From these consulted sources, participants used several information products to stay up to date. Internally shared information products included manuals, guidelines, and letters. Externally shared information products were publicly available and included scientific articles, e-Learnings, and infographics. Newsletters were often consulted, including newsletters shared within the care organization and newsletters to which people subscribed specifically. Information products were exchanged using various channels, both online—such as email, online meetings with colleagues, social media, webinars, and intranet—and offline via personal contact or meetings. The online, low-threshold possibilities for exchanging knowledge and information products are something that all stakeholder groups would like to keep in the future.

3.2.4 | Knowledge exchange

The shared urgency of COVID-19 accelerated collaboration, knowledge production, and exchange between the stakeholder groups, increased the willingness to share knowledge with others, and created a common goal:

Well, a shared problem. That just helps. Everyone is struggling with the same thing and everyone wants to fight the same thing; that virus. Yes, then you are going to help one another anyway because you don't want others... to get sick. [Intermediary 2]

This common goal resulted in increased speed of knowledge exchange and collaboration, which was experienced as a positive development:

What you generally see, of course, is that a lot of things are suddenly possible. Things that normally take a hundred years. So, I think the speed at which we get things done and at which we exchange is very positive. That energy. Then I think; Gosh, we should always have that a little bit more. [Knowledge producer 4]

Within ID-care organizations, local knowledge infrastructures such as Crisis Management Teams (CMTs) were set up to support knowledge exchange internally during the pandemic. The CMTs played a central role in knowledge management concerning knowledge retrieval, keeping up to date with the developments in the sector, translating available knowledge to the ID-care setting, and disseminating knowledge

in an accessible way within the ID-care organization. Knowledge users were very pleased with this internal knowledge infrastructure set-up and with the more specific knowledge that the team provided. Externally, such a crisis infrastructure was lacking, and broader knowledge was shared and exchanged within the sector, not specifically translated to the ID-care setting. During the pandemic, the CMTs fulfilled this role, which had been lacking in the ID-care sector, and responded to the specific needs that existed internally:

Look, we had a crisis team internally and they actually filtered that information and translated it into what you really needed, so to speak, in practice. So, I haven't actually looked up anything else, except that. [Knowledge user 8]

3.2.5 | Knowledge application

Knowledge users struggled to apply the knowledge to practice and formulate specific organizational policy. Retrieved knowledge was used mainly by knowledge users to formulate organizational policy and in situations when decisions had to be made. Nationally announced restrictions needed to be translated quickly to ID-care settings, but the time was insufficient to make that translation properly. The enormous amount of knowledge available and the speed at which knowledge was produced and replaced by novel insights made it hard for knowledge users to make decisions about the usability and applicability of the knowledge, especially when specific knowledge about people with ID was lacking. In addition, at times contradictory knowledge was presented during the crisis, making the application of knowledge even harder.

The extent to which, and how, shared knowledge was actually put into practice is unknown. For example, daily care givers provided care but did not have the time to keep themselves updated with knowledge shared on the intranet:

Well, there are just chunks of text on the intranet. What you have to read, but you are not able to do that quickly between the soup and the potatoes.... And yes, we have some, you have to see it like this...we have a desk in the living room and there are eight clients around me with a severe mental disability and you can't leave them alone too much. In that case, concentration is way more difficult to maintain. [Knowledge user 1]

In addition, not every employee was familiar with searching for certain knowledge or information. Nonetheless, they had an essential position in providing care and were dependent on accurate knowledge. The urgent knowledge needs led to increased knowledge production and exchange, but there was little insight into knowledge users' actual application of the knowledge:

I did hear from some people “Gosh, I read it and maybe we can do something with it”, but whether it was eventually applied, no I don't know.... But I have to say honestly that I just, that it came at the bottom of my priority list and that I shared it mainly like “Gosh guys, know this is there”. Yeah. But no, indeed if you say so, I never asked back for that at all, no. [Knowledge user 8]

3.3 | Roles and collaboration in knowledge management

Roles and collaboration were found to play an important role both in the knowledge needs during the pandemic and throughout all five knowledge management phases. The intensification of collaboration necessitated by the need to exchange knowledge within the ID-care sector influenced stakeholders' roles and the collaboration both within and between stakeholder groups.

Within stakeholder groups, an example of this intensification is presented by the ACs that collaborated in their Association to create rapid responses based on available scientific evidence. In this way, knowledge producers aimed to respond quickly to the knowledge needs by working more closely on knowledge users' specific knowledge needs. Within ID-care organizations, local knowledge infrastructures (e.g., CMTs) shared knowledge for the formulation of specific organizational policy and to inform their organization with knowledge that allowed them to deliver the best possible care. The CMTs provided an important and new structure for knowledge exchange within the ID-care organizations. Between ID-care organizations, however, knowledge exchange and collaboration occurred much less, although there was knowledge exchange and collaboration between similar groups of professionals despite their being from different care organizations. An example of this is a secure messaging app for specialized ID physicians in which knowledge and experiences were shared and physicians could quickly consult one another on specific cases and issues:

People are very quickly able to ask one another questions and get a response. And that, yes, in my case that depends on the efforts of a few doctors who follow that and yes, always stay on top of it. But yes, you see that those kinds of app groups actually work extremely well. [Knowledge user 3]

The role of intermediaries intensified rather than changed. Increased urgency and pressure regarding their knowledge dissemination processes in the ID-care sector increased collaboration and engagement between intermediary stakeholders; for example, through additional meetings and the involvement of non-sector-specific stakeholders:

From the beginning, of course, there has been direct contact with stakeholders. So, the Ministry of Health,

Welfare, and Sport, policy organizations, all relevant parties, professional associations, the academic world. So, partly through regular consultation sessions and partly through newly created consultation forms, new developments were quickly exchanged. [Intermediary 3]

Between stakeholder groups, knowledge producers engaged in translating knowledge and increasing accessibility for knowledge users by developing and disseminating accessible information products, thereby shifting toward the role of intermediaries. An example is the online platform where knowledge users could pose questions directly to knowledge producers. This facilitated direct contact between these parties to speed up dissemination and knowledge production tailored to the needs of knowledge users. Intermediaries also ascertained knowledge users' specific knowledge needs, were increasingly engaged with knowledge users, and felt responsible for facilitating collaboration within the ID-care sector. The urgency of the situation raised awareness among all involved about the importance of collaboration between stakeholder groups. The shared goal of improving the situation for people with ID and advocating for attention for this group in national policymaking was key in this. Stakeholder groups experienced an increased sense of belonging and a common goal, and shared the need to collaborate:

But what is nice, I found, in a crisis like this, is to see that you can actually get together very quickly. “Okay, we'll work on this together.” And that somehow, yes, the collaboration becomes more fluid. In my experience, you also really see where the other person's strength lies. [Intermediary 4]

Well, the ability to act, I think, and the working method, so that it is possible to mobilize people when it comes to urgent issues. And actually, I think, the joint focus. I think that now, because of the seriousness of the crisis, it was possible for many organizations and networks involved to look beyond their own interests and put aside certain things that otherwise might have bothered them in the collaboration. For the sake of the higher goal, shall we say. [Knowledge user 7]

However, existing structures could challenge collaboration even though there was a strong common goal. Recurring competition regarding grant applications, different visions or focus, and conflicts of interest between stakeholder groups, for example, emerged when the first grant calls were posted, inducing competition between and within stakeholder groups:

Moreover, I find it very contradictory if you then keep on, yes, facilitating competition between research groups. So, ... if I put it too bluntly, you also throw a lot of money down the drain by making everyone work

their asses off and then get only a very small portion honored. That's not the healthy way to go. [Intermediary 3]

4 | DISCUSSION

This study explored the ways in which three stakeholder groups carried out their knowledge management in the ID-care sector during the COVID-19 pandemic. We used the conceptual framework consisting of the five phases of knowledge management and three stakeholder groups and identified three key themes that characterize knowledge management in this sector during the COVID-19 pandemic: (1) knowledge needs during COVID-19, (2) experiences with knowledge management, and (3) roles and collaboration. Our study showed that there was an urgent need for specific ID-related knowledge and how to translate available evidence from the general population to ID-care settings. In the five phases of knowledge management, knowledge validation especially was a bottleneck during this crisis situation. There was little insight into how the exchanged knowledge was applied in practice because the focus was mainly on knowledge production and sharing with knowledge users. Within stakeholder groups, collaboration and knowledge exchange were intensified by knowledge structures such as ACs or CMTs. Between stakeholder groups, knowledge producers and users created short lines to exchange needs and produce knowledge, sometimes bypassing intermediaries to speed up the process. Collaboration and the feeling of togetherness were improved by the shared goals of improving the situation for people with ID and creating visibility in national policymaking, although funding and mutual competition could threaten collaboration. The urgency and speed of knowledge production and the limited role of end-users in knowledge management are specific topics addressed below.

During the pandemic, knowledge was rapidly produced and shared. However, the evidence behind the exchanged knowledge was not always clear. Knowledge often concerned the general population, and knowledge specifically translated to the situation of people with ID and their care settings was scarcely available. This speed in knowledge production links to the general academic response to the pandemic. For example, scientific journals changed their publishing procedures to allow faster publication to fill existing knowledge gaps (Horbach, 2021), but faster publication procedures may influence the quality of peer review and published papers. Moreover, with new data and research becoming available, new insights arise, resulting in an incomplete and ambiguous evidence base (Rutter et al., 2020). The healthcare sector as well as the ID-care sector had to work with this incomplete evidence in decision- and policymaking, which was reflected in the uncertainty about the validity and setting-specific usefulness of knowledge found in the current study. The pressing need for knowledge also provided room for the spread of misleading and fake information, especially on social media, also referred to as the "infodemic" by the World Health Organization (World Health Organization, 2020b). The (mis)information overload made it harder for people to find trustworthy and reliable information when needed

(van der Linden et al., 2020), as also reflected in our study. Since misinformation may have serious consequences on health(care) outcomes, it is important to develop and define knowledge structures that foster mutual empathy and trust (Cegarra-Navarro et al., 2023). This study showed the significance of continuous investment in knowledge infrastructures within the ID-care sector, in which the three stakeholder groups act jointly in the five phases of knowledge management. The urgency of the situation motivated stakeholder groups to collaborate more closely, meeting the needs of knowledge users. This raised awareness about the importance of collaboration between stakeholder groups and increased empathy toward each other. However, this study found that during crisis situations knowledge validation received far less attention compared to knowledge production and exchange since knowledge users were mainly focused on the primary process of providing care instead of active involvement in knowledge management processes. This tendency of organizations to narrow their focus to key issues and challenges of their own organization was acknowledged in previous research (Pina e Cunha & Chia, 2007). Paying increased attention to supporting knowledge users with knowledge validation helps to properly assess the reliability and usefulness of knowledge and improves the use of relevant knowledge in practice. Intermediaries and knowledge producers should be aware of the potential spread of misinformation during future crisis situations and be prepared to offer support and clarity to knowledge users (Naeem & Bhatti, 2020), both during and outside times of crises.

Knowledge users' actual use and application of knowledge (phase 5 in knowledge management) received far less attention compared to the other phases. The focus was on production and dissemination of knowledge, but the extent to which the shared knowledge was applied in practice and the extent to which that knowledge contributed to improving the quality of care were unclear (Greenhalgh et al., 2004; Grol et al., 2007). Involvement and active participation of end-users in (health)research is important to generate research impact on practice and is a well-proven way to increase the usability and applicability of research outcomes (Boote et al., 2002; Halvorsrud et al., 2021; van Dijk-de Vries et al., 2020). Collaborative networks, such as ACs, can be established to enhance end-user involvement. When these collaborative networks already exist and mutual trust is established, they can rapidly address knowledge users' needs during a crisis. Furthermore, by tapping into each other's expertise, knowledge can be co-created (Embregts et al., 2020). Previous research showed that the contextual factors relevant for knowledge sharing and application before the pandemic (e.g., the leadership of professionals and user-friendliness of interventions) also played an important role in processing knowledge during the pandemic (Kersten et al., 2023). For example, a registry was launched for COVID-19 among people with ID, which was a joint initiative of an AC and the Ministry of Health, Welfare, and Sports in the Netherlands (Koks-Leensen et al., 2023). The registry established a solid foundation for policymaking and practical decision-making in response to the pandemic. However, during the pandemic knowledge users were focused on providing care for their clients under difficult circumstances, and involvement in

research was not a priority. Moreover, the usual face-to-face meetings, task groups, conferences, and working visits were not possible under lockdown conditions and were replaced by online meetings (Embregts et al., 2022; Vromans et al., 2023). The used sources that were identified in our study, and the increased collaboration within and between stakeholder groups illustrate the importance of personal contacts in finding and applying knowledge. It is an asset to have networks with personal contacts available during crisis situations such as the COVID-19 pandemic (Kersten et al., 2023). These networks can be fostered outside a crisis situation. The local CMTs described, ACs, and their joint forces in an Association (Embregts et al., 2020), are examples of opportunities to further develop such networks in the future. This study during the COVID-19 pandemic illustrates the importance of decentralized local contacts, networks, and knowledge infrastructures as complementary to the available centralized, national knowledge infrastructures. For example, local crisis knowledge management networks emerged during the pandemic and proved to be a success by facilitating collaboration within the sector. Research on collaborative networks in healthcare is primarily focused on the content or underlying objectives of collaboration, rather than the processes of collaboration itself. Future research should investigate the functioning of these collaborative networks, as there is limited understanding of how they can effectively facilitate interorganizational research-practice collaboration and knowledge management, both in- and outside crisis situations (Mervyn et al., 2019; Provan et al., 2007; Provan & Lemaire, 2012; van der Weert et al., 2022).

4.1 | Limitations and strengths

This study's findings should be interpreted in light of a few limitations. First, an important intermediary stakeholder (i.e., a healthcare subsidy provider) declined to participate in this study on the basis of a possible conflict of interest. As several participants indicated its important role in knowledge management in the ID-care sector, it would have been valuable to have interviewed this stakeholder in the current study. Nonetheless, we included a large number of participants from various backgrounds that contributed unique insights into knowledge management during the COVID-19 pandemic. With these insights, lessons learned and recommendations were formulated to improve future knowledge management processes in the ID-care sector. Second, this study provides insights about knowledge management and needs during the first wave of the COVID-19 pandemic. How knowledge management was experienced before or after this first wave has not been studied. To the authors' knowledge, this is the first study to explore knowledge management processes in the ID-care sector during the COVID-19 pandemic and still provides useful knowledge in a unique setting in which knowledge management was of great importance. We focused on these knowledge management processes during the first wave because knowledge scarcity was at its highest with a pressing need for knowledge production and exchange. Third, the interviews were scheduled online because of the COVID-19 pandemic. Initially, we anticipated that this would be a disadvantage, but

conducting interviews online actually opened up possibilities for interaction by making it easier to schedule interviews and contributing to the wide variety of participants. In addition, participants provided a positive response to the use of Microsoft Teams and stated that they barely noticed any difference between online and face-to-face interviews.

4.2 | Conclusions

This study showed the urgent need for specific knowledge and guidance on how to translate available evidence for the general population into specific ID-care settings. In knowledge management, the focus was on the production and exchange of knowledge, with validation and application receiving less attention. Involving end-users in improving validation and application will help prepare for better knowledge management during future crisis situations. The developed and intensified networks and personal contacts were a major asset for knowledge management. The pandemic illustrated the importance of further developing such local contacts, networks, and knowledge infrastructures in the future.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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APPENDIX A

TABLE A1 Overview of interview topics and questions.

Topic	Interview question
General	<ol style="list-style-type: none"> 1. Can you describe your current position and the organization for which you work? 2. How does the COVID-19 crisis affect your current position? 3. What role does knowledge or information play in this?
Knowledge searching and presentation	<ol style="list-style-type: none"> 4. How do you/does your organization keep abreast of new developments concerning the COVID-19 crisis for people with ID? 5. What are your top three sources from which to seek and find information concerning COVID-19? 6. If you need information, in which situation(s) is this mostly? 7. What do you consider your role in seeking information? 8. Were you aware of the possibility to submit questions concerning COVID-19 to the Association of Academic Collaboratives Intellectual Disabilities and knowledge institute <i>Vilans</i>? 9. Have you made use of this option and why/why not?
Knowledge validation and application	<ol style="list-style-type: none"> 10. If you need knowledge/information about COVID-19, what kind of knowledge/information do you need? (Concerning what topics/type of information?) 11. What is the knowledge/information usually used for? 12. How important is this knowledge/information for your organization? 13. What factors play a role in this?
Knowledge production	<ol style="list-style-type: none"> 14. How are you/is your organization involved in producing knowledge/information about COVID-19? 15. What is the main reason for this? 16. With whom do you collaborate? 17. How do you see your responsibilities toward producing knowledge or information? 18. What role do you want to play in this?
Knowledge sharing	<ol style="list-style-type: none"> 19. What knowledge/information about COVID-19 do you share with others? 20. Is it important that you influence how the knowledge/information is used? 21. Why is that important? How do you do that? How would you like that? 22. Why is it not important?
Experiences in knowledge management ID-care sector	<ol style="list-style-type: none"> 23. How did you experience the knowledge exchange in the ID-care sector during the COVID-19 crisis? 24. Concerning your experiences with knowledge exchange during the COVID-19 crisis, what would you like to keep or change in times without COVID-19? 25. Would you describe the COVID-19 crisis as a threat or as an opportunity for knowledge exchange in the ID-care sector and why? 26. How would you like to see knowledge exchange in the ID-care sector? 27. What role do you/does your organization want to play in this?

APPENDIX B

TABLE B 1 Data coding.

First-order themes	Second-order themes	Third-order themes	Aggregate theoretical dimensions
<ul style="list-style-type: none"> • Course of COVID-19 infections. • Number of infections and mortality. • Contagiousness of the virus. • COVID-19-related symptoms. • Specific knowledge applicable to people with ID and their care settings. • Impact and practical challenges of restrictions. • Social distancing. • Distant or online care provision. • Visiting arrangements. • Use of protective equipment. • Lockdowns of group homes and residential facilities. • Testing and contact tracing. • Organization of care. • Local organizational policy. • Organization of new ways of working (e.g., online, distant from colleagues or clients, and providing social support to colleagues and employees coping with stress and mental problems). • Dealing with anxiety and stress. • Adjusting organizational policy while taking the specific vulnerability of people with ID into account. 	<p>The virus itself</p> <p>Changes in working conditions</p>	<p>Topics of interest</p>	<p>Knowledge needs during COVID-19</p>
<ul style="list-style-type: none"> • Need for clear, unambiguous, streamlined, and fast knowledge exchange to ensure adequate care provision, and to justify and facilitate decision-making. • Need for specific scientific research on COVID-19 in people with ID, visibility of local organizational policy (e.g., developments and restrictions within care organization), and experiences from colleagues and clients. <p>Intermediaries:</p> <ul style="list-style-type: none"> • Experienced urgency to meet the knowledge needs of knowledge users; producing and exchanging knowledge. • Knowledge needs about the selection, translation, and dissemination of COVID-19-related knowledge. • Knowledge needs about managing the knowledge flow to support ID-care organizations. 	<p>Impact of COVID-19-related restrictions on clients health and well-being</p>	<p>Differences between stakeholder groups</p>	

(Continues)

TABLE B1 (Continued)

First-order themes	Second-order themes	Third-order themes	Aggregate theoretical dimensions
<p>Knowledge producers:</p> <ul style="list-style-type: none"> • Experienced urgency to meet the knowledge needs of knowledge users: producing and exchanging knowledge. • Identification of knowledge gaps within the sector. • Knowledge needs on how to conduct research from a distance, safeguard ongoing data collection, and dealing with challenges in face-to-face data collection. 			
<p>Knowledge users:</p> <ul style="list-style-type: none"> • Desire to share practical experiences and contribute to scientific processes. However, knowledge users lacked the time to contribute to this kind of knowledge production. • Contributing to COVID-19-related data collection and jointly answering research questions with other stakeholder groups made involvement in (scientific) knowledge production possible. • Developing information products that supported organizational policy (e.g., protocols, visiting arrangements, and manuals). <p>Intermediaries:</p> <ul style="list-style-type: none"> • Disseminating and translating (scientific) knowledge. • Making available knowledge findable and accessible to knowledge users by creating accessible articles, factsheets, and videos. • Organizing (online) learning communities and web portals, and developing screening surveys concerning COVID-19 in care organizations. 		<p>Knowledge production</p>	<p>Experiences with knowledge management</p>
<p>Knowledge producers:</p> <ul style="list-style-type: none"> • Producing scientific knowledge about COVID-19 specific to people with ID. • Supporting ID care organizations in their knowledge needs. • Struggling with the speed at which scientific research had to be conducted to meet knowledge users' needs. • Increasingly involved in translating and disseminating scientific knowledge in an accessible way. • Crisis situations forced to work closer to practice to respond to knowledge users' urgent knowledge needs. • Scientific publishing process was perceived to be too slow. <p>All stakeholder groups:</p> <ul style="list-style-type: none"> • A constant flow of knowledge made it difficult to weigh and validate knowledge, and make decisions about its dissemination. 		<p>Knowledge validation</p>	

TABLE B1 (Continued)

First-order themes	Second-order themes	Third-order themes	Aggregate theoretical dimensions
<ul style="list-style-type: none"> • Knowledge specifically translated to (the care setting of) people with ID was scarcely available, causing stakeholders to question the validity and applicability of knowledge. • Need to exchange available knowledge more efficiently, identify clear frameworks in the provision and exchange of knowledge, and jointly assess the relevance of knowledge, so knowledge users can find knowledge easily, assess its usefulness, and apply it in practice. • Unclear which stakeholder group was primarily responsible regarding knowledge validation. 			
<p>Knowledge users:</p> <ul style="list-style-type: none"> • Not used to retrieving and validating knowledge. • Wondering how to translate general knowledge into practice in their own ID-care setting. • Hard to stay up to date due to the amount and speed of knowledge exchanged. 			
<p>Intermediaries:</p> <ul style="list-style-type: none"> • Maintained guidelines and selection processes in knowledge validation and sharing. 			
<p>Knowledge producers:</p> <ul style="list-style-type: none"> • Launched an online platform for knowledge users to submit their COVID-19-related questions, which were rapidly and scientifically answered. • Setting up new COVID-19-related research projects. 			
<ul style="list-style-type: none"> • Internal sources, for example, colleagues, the intranet, or the Crisis Management Team. 	Sources	Knowledge presentation	
<p>External sources</p>			
<ul style="list-style-type: none"> • General sources, for example, national press conferences, social media, and knowledge from the National Institute for Public Health and the Environment. • Sector-specific sources, for example, the Association of Academic Collaboratives Intellectual Disabilities. 			
<p>Shared information products:</p>	Information products		
<ul style="list-style-type: none"> • Internal, for example, manuals, newsletters, guidelines, and letters. • External, for example, scientific articles, e-Learnings, newsletters, and infographics 			
<p>Channels to exchange information products:</p>			
<ul style="list-style-type: none"> • Online, for example, email, online meetings, social media, webinars, and intranet. 			

(Continues)

TABLE B1 (Continued)

First-order themes	Second-order themes	Third-order themes	Aggregate theoretical dimensions
<ul style="list-style-type: none"> • Offline, for example, personal contact or face-to-face meetings. • Set up of local knowledge infrastructures within care organizations (e.g., Crisis Management Teams) to respond to specific knowledge needs in the ID care sector. • Shared urgency of COVID-19 accelerated knowledge exchange between stakeholder groups, increased the willingness to share knowledge, and created a common goal. • Common goal resulted in an increased speed of knowledge exchange. • Lacking crisis knowledge infrastructure and sector-specific knowledge exchange. • Knowledge was used to formulate organizational policy and support decision-making. • Proper knowledge translation to ID care settings was hard. • Not every care provider was familiar with knowledge searching and there was little time for daily caregivers to keep themselves up to date. • Little insight into knowledge users' actual application of the exchanged knowledge. 	<p>Internal</p> <p>External</p>	<p>Knowledge exchange</p> <p>Knowledge application</p>	
<p>Knowledge seekers:</p> <ul style="list-style-type: none"> • Local knowledge infrastructures (e.g., CMTs) for the formulation of specific organizational policy and to provide the best possible care. <p>Intermediaries:</p> <ul style="list-style-type: none"> • Role intensified: urgency and pressure regarding knowledge dissemination processes increased collaboration and engagement between intermediaries. <p>Knowledge producers:</p> <ul style="list-style-type: none"> • ACS collaborated in their Association to create rapid responses based on available scientific evidence to quickly respond to knowledge users' knowledge needs. <p>Knowledge users:</p> <ul style="list-style-type: none"> • Knowledge users could pose questions directly to knowledge producers on an online platform: facilitation of direct contact to speed up knowledge dissemination and production. • Increased engagement with knowledgeable users and experienced responsibility for facilitating collaboration within the sector. 		<p>Within stakeholder groups</p> <p>Between stakeholder groups</p>	<p>Roles and collaboration in knowledge management</p>

TABLE B1 (Continued)

First-order themes	Second-order themes	Third-order themes	Aggregate theoretical dimensions
<p>Knowledge producers:</p> <ul style="list-style-type: none"> • Shift toward the role of intermediaries: engagement in knowledge translation, and developing and disseminating accessible information products. <p>All stakeholder groups:</p> <ul style="list-style-type: none"> • Raised awareness about the importance of collaboration between stakeholder groups. • Experience of increased sense of belonging and a common goal: a shared need to collaborate. • Existing structures could challenge collaboration and induce competition between stakeholder groups: recurring competition regarding grant applications, different visions or focus, and conflicts of interest between stakeholder groups. 			

Note: Certain themes (e.g., knowledge production) needed fewer steps to reach the aggregate theoretical dimension, which causes not all themes to consist out of a first-, second-, and third-order theme.