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Computer Supported Qualitative Research

New Trends in Qualitative Research
(WCQR2022)

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Preface

This book contains a selection of papers from the works accepted for presentation and discussion at the sixth (6th) World Conference on Qualitative Research (WCQR2022), held online from 26 to 28 January 2022. The conference organisers had the collaboration and sponsoring of several universities, research institutes and companies, including the University of Aveiro/CIDTFF, National Centre for Research Methods (NCRM), Asian Qualitative Research Association (AQRA), Ibero-American Congress on Qualitative Research (CIAIQ), webQDA, Timberlake Consultants, Atlas.ti, Adventus University, Sociedade de Estudos e Pesquisa Qualitativos (SE&PQ), Optimal Workshop and Global-CAR.

The conference's focus was on qualitative research, emphasising methodological aspects and their relationship with research questions, theories and results. This book mainly focuses on using computer-assisted qualitative data analysis software (CAQDAS) to assist researchers in using correct methodological approaches for qualitative research projects.

WCQR2022 featured four main application fields: education, health, social sciences, engineering and technology. The conference included seven main subjects: rationale and paradigms of qualitative research (theoretical studies, critical reflection about epistemological, ontological and axiological dimensions); systematisation of approaches with qualitative studies (literature review, integrating results, aggregation studies, meta-analysis, meta-analysis of qualitative meta-synthesis, meta-ethnography); qualitative and mixed methods research (emphasis on research processes that build on mixed methodologies but with priority to qualitative approaches); data analysis types (content analysis, discourse analysis, thematic analysis, narrative analysis, etc.); innovative processes of qualitative data analysis (design analysis, articulation and triangulation of different sources of data—images, audio, video); qualitative research in Web context (eResearch, virtual ethnography, interaction analysis, Internet latent corpora, etc.); qualitative analysis with the support of specific software (usability studies, user experience, the impact of software on the quality of research and analysis).

After a careful review process, with at least three independent reviews for each paper, a total of 23 high-quality papers from WCQR2022 were selected for publication in this volume, with several authors totalling over eighty-six (86), from eight (8) countries, including Brazil, Costa Rica, India, Kenia, Poland, Portugal, South Africa, and Spain. The volume also features invited papers (the two first ones) from distinguished researchers in qualitative data analysis and computer-supported qualitative data analysis.

We would also like to take this opportunity to thank the WCQR2022 organisation members Catarina Brandão, Conceição Ferreira, Elizabeth Pope, Fábio Freitas, Gregory Bryda, King Costa and Sónia Mendes for their thorough and exceptional work on the scientific management, logistic arrangements, publicity, publication, and financial issues. We also express our gratitude to all the WCQR programme committees and the additional reviewers, as they were crucial for ensuring the high scientific quality of the event. We want to acknowledge all the authors and delegates whose research work and participation made this event successful. Finally, we recognise and thank all Springer staff involved for their help during the production of this volume.

March 2022   António Pedro Costa
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Contents

Knowledge Transfer and the Challenges of the Virtual World

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Abstract. Transferring knowledge to the clinic is a complex process and involves more than disseminating or communicating research results; it implies the planning and implementation of strategies to identify target audiences, such as clinicians, managers, policy agents, and consumers. In this reflection article, the authors aim to discuss challenges to be transferring knowledge and 'qualitative evidence' in the virtual world and promote the debate about strategies for disseminating qualitative research online. This text results from the dialogue between the researchers' concerns, their experiences, and the literature on the subject. The situation caused by SARS-CoV-2 made it clear that there are clear challenges to using qualitative research methods and techniques in the online modality, from the design to the implementation of knowledge. The complexity of the processes experienced by people has increased the need for in-depth qualitative studies to make clear the influence of context, constraints and adaptations resulting from the pandemic on human existence, but also has made it clear that the methods and techniques of data collection that were traditionally developed in the field need a different methodological approach to be carried out in an online modality. On the other hand, the implementation of knowledge in clinical settings can be achieved with virtual strategies, but it also implies collaborative work between researchers and clinical professionals. We conclude that there is a need to study the use of methods and techniques traditionally used in the context for its use either in online modality or to explore the virtual world.

Keywords: Knowledge transfer · Decision making · Academic-practice integration · Virtual world

1   Introduction

Evidence-Based Practice has emerged as a hot topic in the discussion about the use of knowledge, raising concerns about the effectiveness and feasibility of its approach and the fact that clinical evidence and decision-making are timely, appropriate, and meaningful for people or communities [1]. In this discourse, the transfer of evidence has been debated by the importance of ensuring an Evidence-Based Practice (EBP) [1–3]. Transferring knowledge to the clinic is a complex process and involves more than disseminating or communicating research results; it implies the planning and implementation of strategies to identify target audiences, such as clinicians, managers, policy agents, and consumers [1]. It also means collaborative work [2], design, implementation, and methods to organise and transfer understandable and usable information in making decisions [1, 4].

Despite the advantages of knowledge use and evidence-based practice, the authors note that the models for knowledge transfer and EBP are linear and privilege research results produced by quantitative research methods and techniques, basing this assertion on the fact that there are more systematic reviews with meta-analyses to guide guidelines than meta-aggregations or meta syntheses [2, 4–7]. Berger and Luckmann even consider that we continue to be immersed in a culture of quantity. From an early age, we have become accustomed to our socialisation processes, to the health professions, with contents focused on the biomedical model [8].

We collaborate on these weaknesses because meta-analysis studies have not had the same development as systematic reviews of qualitative studies, which contradicts the recognition of a dynamic clinical practice, which understands the notion that time, space and context influence reality and that clinical practice and research are interactive.

Rethinking the place of qualitative research in production, including the transfer of knowledge to the clinic and the strategies for incorporating qualitative results in the praxis, overcoming the barriers/obstacles that dissociate knowledge into quantitative or qualitative should be a priority for researchers [2, 3].

For that, health care institutions need to make a paradigmatic shift as consumers and producers of science. If, on the one hand, technological and scientific advances produce new knowledge, technologies and techniques that must be quickly appropriated by professionals, on the other hand, the production of "useful" knowledge to solve the complex problems faced by professionals in their daily practice must be carried out "in loco" in the contexts where this practice takes place [2–4].

The issue's complexity extends to the proliferation of models, theories, and tools related to implementing knowledge in the clinic. Some authors observed that it is possible to identify three purposes in the use of these theories, models and tools: (1) to describe and guide the translation process of the research in practice, (2) to understand and explain what influences the results of the implementation and (3) to evaluate the implementation [5]. Most of these approaches are collaborative/interactive and include more or less frequent exchanges between researchers (knowledge producers) and clinicians and healthcare clients (potential knowledge users) throughout the process [6, 7]. Thus, users and even end consumers (healthcare clients) play an active role, contributing to one or more stages of the research: formulation of the initial question, validation

of data collection instruments, interpretation, validation and dissemination of results, among others [6].

Cross-cutting to the different approaches that believe in the value of knowledge, the ability to implement best practices, the contexts facilitating the implementation of evidence and support are some of the facilitating factors [9] for knowledge transfer and evidence-based decision-making.

Some researchers argue that improving students' knowledge, attitudes, and competencies at the level of scientific evidence are more significant when learning is integrated into the clinical context [10–12]. This learning becomes more realistic and practical, as it allows the involvement of the student, teacher and professionals in the discussion and analysis of specific contextual situations. The shared information enhances conscious decision-making about the action to be developed, thus improving health care [12].

Our experience reveals some adversities in transferring knowledge (TK) inherent to the pandemic context that conditioned multi-professional and interinstitutional work [2, 12]. We believe that the situation caused by the SARS-CoV-2 has made it clear that TK, throughout its process, is influenced by the virtual world, by the ease of access to information, but also because the different applications and digital functionalities can promote communication between academia and practice and if well explored expedite the safe transfer of knowledge to the beneficiaries of the knowledge [11].

As reported by some authors, the pandemic changed qualitative research, from the study design to the introduction of results in the clinic. It also increased the intersubjectivity associated with qualitative research, introduced methods and techniques that can affect the results, and again favoured linear models of knowledge transfer with consequences in practice based on evidence [11].

Bond, Shipton, Jones, Butler, and Gibbs, in 2007 [12], already noticed this reality by stating that the widespread use of the web has provided a mechanism for sharing large volumes of information. It allows the transfer of knowledge among all sectors of society, providing a unique opportunity for the rapid progression of science and their understanding by the public and alerts so that the data management systems for the transfer of knowledge are (re)designed for collect, process and manage field data and implications for data analysis and decision making. It urges to discuss these aspects to ensure the validity of the results and the safe use of qualitative evidence [11].

This chapter aims to discuss challenges of transferring knowledge and 'qualitative evidence' into the virtual world and promote the debate about disseminating qualitative research online.

2   Method

This is a reflection article about Knowledge transfer and the challenges of the virtual world, where the authors reflect about their experience and explore the literature on the subject.

Our principal concern on conducting this reflection was to observe how health research has been productive in recent years, not only in results but also in dissemination, even though there are several gaps in knowledge transfer to the clinical contexts. For instance, these gaps could consist in the difficulty of identifying global health needs

for the discovery of new knowledge through research; the concerns about the bridge between this new knowledge and the production of clinical and social research to ensure its applicability; and difficulties to the incorporation of produced knowledge into good practices and health system policies [14].

We believe that the pandemic has aggravated these gaps, and our statement echoes in the work of other researchers who advocate that the SARS-CoV-2 pandemic introduced clear research limitations, as it forced researchers out of clinical settings due of the risk of contagion, affecting the use of techniques that rely on the word, the look and empathy [15]. Many studies have been suspended, and activities have been reorganised due to COVID-19's contingency plans [11].

It's important to mention that studies with mixed or qualitative methods were incredibly difficult to carried out, because of the contingency plans and, as aforementioned in the introduction, seeing their results implemented in the clinic. Despite the adversities, the researchers adapted to the difficulties and were able to produce various studies, even qualitative ones, through methods and techniques used online, allowing the maintenance of communication and collaboration networks between researchers, professionals and participants [11]. This movement allowed researchers to produce research results from the point of content (knowledge) and also from the point of view of process (transfer) [11]. So if, on one hand, the pandemic hindered research, on the other, it fostered researchers' creativity to respond to new challenges.

Faced with the challenges above and focusing on the method, this study was guided by the following questions:

a) Did the pandemic crisis influence the knowledge transfer and evidence-based practice?
b) Can the issue of knowledge transfer and implementation be achieved only through online activities?

3   Results and Discussion

Although it seems to be a buzzword often referred to by professionals, politicians and health economists, EBP is a central question for the sustainability of the health systems worldwide. Not only the pandemics but also other variables such as the ageing population, the increase in chronic diseases, the number of people with disabilities, functional decline and dementias are changing the population morbidity profile population and, consequently, challenging professionals to new ways of doing things to empower people for the health-disease processes they are experiencing.

Not only the question of the sustainability of the (National) Health System, allowing more to be done with fewer resources, cannot be unrelated to research but also a specific social justice associated with it. For instance, identifying new models for care providers are a big challenge for the discussion of how to "transfer" knowledge and skills to empower health professionals for EBP and simultaneous to enable patients and family caregivers to provide continuity of care to the person.

Knowledge transfer has been a concern, and different strategies have been used to achieve it, from problem-solving models to evidence-based practice, among others.

However, the emphasis has been on linear and unidirectional models, to passively take information from researchers to users (clinical practice professionals) [16], and that has consequences because the use of research findings are slow, making innovation in healthcare delivery much more difficult, resulting in the use of methods that are already obsolete [14].

These difficulties have led some researchers to advocate that the traditional models of knowledge transfer and access are not effective, supporting the existence of more interactive and productive models [16], which can act not only at the individual level but also at the organisational level of health policies, ensuring that from the beginning, research is designed to be attentive to the needs of practice [2, 6, 16].

In the specific case of scientific knowledge in nursing, the different natures of knowledge produced not only have the potential to improve sensitive health outcomes but also to develop and introduce innovative technologies in care. However, to achieve this purpose, it is necessary to accelerate the use of research results in practice and health policy-making [14], for maximising the chances of study transferability, providing an explanation of implementation processes, developing and tailoring interventions, evaluating transfer and knowledge implementation, and explaining outcomes [17].

Pandemics have imposed a rapid and disruptive transformation of the world healthcare systems [18]. This change can reinforce aspects of healthcare provision, such as telemedicine and acute care, disabilities, elderly care, drug and alcohol, and mental health. It also challenges health researchers to work closely with professionals, helping to implement an EBP in situations of uncertainty even with lack of evidence. Traditionally, evidence and synthesis have been obtained from systematic reviews [1, 18, 19]. Still, this pandemic is not a normal situation [18]. In part, we agree that the traditional research methods, supported by EBP, have proven inadequate to respond to the urgent questions COVID-19 has posed to decision-makers [18]. Nevertheless, the issues that initially arose with the SARS-CoV-2 quickly spread to other areas of health that were relegated the background given the urgency of this disease and the mitigation of contagion. Even in areas that the decision of the professionals was based on the evidence occurred some disruptions and that leads to our first question. Does this pandemic crisis influence the knowledge transfer and evidence-based practice?

3.1 Does this Pandemic Crisis Influence the Knowledge Transfer and the Evidence-Based Practice?

We believe that the situation caused by SARS-CoV-2 has made clear that the knowledge translation, in all the processes, had a significant influence on the virtual world and social media. This is due to the easy and fast access we have to the information and to the different digital approaches. Furthermore applications and functionalities can promote communication between academia and practice, saving the transfer of knowledge to the field.

The pandemic situation created some changes in research, from the study's design to the transference of results to the clinic, it increased the intersubjectivity associated with research, and caused some changes in the technique of approach creating a bias in the results. For this reason, the scientific community continued to prefer traditional models to transfer the knowledge to the practice [2, 11].

Although the web provided a massive way to share large volumes of information, allowing the transfer of knowledge between all sectors of society and providing a unique opportunity for the progression of science [13], in our reality, the discussion about the data management systems for knowledge process, collect and transfer to the field, must be analysed to ensure the viability of the results and to ensure evidence quality, even associate to the scientific literacy of health professionals and citizens, who often have difficulty understanding research findings and levels of evidence.

Similarly, Schaeffer et al. [20] lists that knowledge transfer is a great challenge for higher education and academia to establish informal and formal connections to the practice. He considers that the dynamics of the interconnection of knowledge are essential, especially in teamwork. He also reinforces the idea that teamwork is better than individual work and that teamwork will significantly impact the field.

Other researchers mentioned that evidence-based practice teaching would have to assume greater preponderance in the higher education curriculum, ensuring that the skills are developed in the three study cycles, using an integrative perspective, and standardizing teaching techniques and approaches to students [21]. Some authors corroborate the idea that EBP develops through the participation of future professionals in research projects, increasing their capacity to read, produce, and synthesise knowledge [22]. So the issue of evidence starts as a result of theoretical classes on how to conduct investigations but must be associated with other strategies so students can acquire the abilities and develop competencies and scientific attitudes [21, 22]. However, even the education of health professionals was affected by the pandemics, and clinical experiences had to be organised to impact the teaching-learning process [22, 23].

Even before pandemics, the clinical contexts and situations of the diseased became increasingly complex, demanding an increase in scientific abilities from students and professionals to facilitate theoretical-practical integration and strengthen new learning experiences [22, 23].

Both for professionals and students, the increase of work in health systems during this time leads to a rise in the number of nurses to face the needs of hospitalisations, creating a turnover in the organisations, which directly or indirectly translates into a loss of intellectual capital and high costs for the organisation. This situation leads to delays in decision-making and a substantial loss of opportunities for growth and innovation [21], impacting the students in the clinical settings.

At the same time, the pandemic also pushed the higher education-health organisations to a new field; they had to reinvent themselves because of the confinement (to mitigate the risk of spreading the infection). This gap was bridged with new communication tools to promote the rapprochement and ensure that knowledge production was grounded in clinical practice data. It was a transformation of weakness into an opportunity for innovating and optimising the resource.

These difficulties were extended to health students, specifically nursing students, who could not attend clinical practices. With new applications like *Microsoft teams*, *zoom* and other online meeting platforms it was possible to maintain knowledge and the link with the academy.

We must create a Knowledge Translation Program that works with researchers and knowledge users (including patients, the public, clinicians, managers, policymakers)

to develop a strategy to use the knowledge at the clinical and policy levels. Ensuring high-quality evidence reaches patients, health care providers and policymakers by using effective strategies to improve the quality of care and strengthen the health system. Furthermore, we will say that we saw a little bit of this on the pandemic management (articulation between all the structures).

During the SARS-CoV-2 pandemics', worldwide Internet access was well established; the free open-access medical, educational material and social media were a powerful dissemination tool, in addition to traditional communication methods.

One of the good examples of efficiency was the rapid dissemination of the safe, practical intubation guidelines for use in operating theatres and other critical care areas during a pandemic. This made it possible for countries that have not yet faced the pandemic to develop safe intubation practices, avoiding the increase in health professionals' contagion.

However, there was false information, like on March 18th, 2020, about the risk of using non-steroidal anti-inflammatory drugs (NSAIDs) in COVID-19 infections. The World Health Organization (WHO) and some regulatory authorities (European Medicines Agency, National Health Services, and others) have stated that there is currently no evidence to support aggravation of COVID-19 infection with NSAIDs. The WHO retracted their recommendation a few days later, but significant confusion and trepidation remained about prescribing anti-inflammatories.

Moreover, this is an excellent example of using unidirectional models to transmit knowledge to the clinic. Despite search engines and the ease of access to databases by all professionals, the access to research findings and the introduction of study results into clinical practice takes time and, in some cases, research findings are not effectively integrated into the intended care settings where they could generate an improvement in health care [24], increasing the quality and reducing the costs associated with recurrent complications.

Especially the qualitative findings have more difficult to be introduced in clinical settings. It is true that the use of the qualitative conclusions will not only produce better results in population care but will also direct the products at the level of care of the different professionals, with translation into the purposes of health systems [7]. However, there are also complex challenges at this level, such as monitoring and assessing the impact of knowledge use using indicators that are sensitive to findings rather than data [12].

The SARS-CoV-2 epidemic was increased research strategies, but the link between academy and practice was not adequate, and researchers did not always have an active role to facilitate the entire process, brings rigour to the research, and to the translation of the knowledge so this union must be established or maintained.

Translating knowledge into the clinic implies a collaborative approach in which the exchange between researchers and practitioners is frequent, and each assumes an active role in this process. This context in which we live has conditioned multi-professional and inter-institutional work, which has proven to be adverse to the transfer of knowledge in the sense that it meets the needs of all its users. In this context, digital technology has assumed vital importance, enabling and speeding up knowledge transfer to its beneficiaries.

3.2 Can the Issue of Knowledge Transfer and Implementation be Achieved Only Through Online Activities?

If, on one hand, the constant advances in medicine, with new equipment, new techniques and new knowledge with an almost daily impact, impose pressure on health professionals and on the Health System itself [25, 26], on the other hand, financial, economic, social and cultural factors are stakeholders that can hamper the innovative performance of praxis [27]. The digital age has provided better articulation between stakeholders, enabling faster and more efficient access to knowledge sharing, positively impacting innovation performance and competitiveness in different areas [28].

The EBP imposes a process of research, analysis and transfer of current scientific knowledge, essentially developed through online access, using databases and search engines. In addition to dedication and mastery of research competence, availability and time, this process requires aspects that some sectors, such as health, have difficulty ensuring. Although everyone recognises the value of knowledge derived from evidence, the transfer of this evidence to praxis and behaviour change is a slow process and subject to becoming obsolete when implemented [29].

Park et al. [30] said that using new information technologies, the web, and social media as a platform for disseminating evidence-based practice had shown promising results in developing students' skills in a health area. However, it is necessary to create applications that monitor and measure the relationship between the nurse and the patient, promote person-centred care, enhance knowledge transfer, and use key performance indicators to increase the best care experience [30].

An approach developed to knowledge transfer, applied to the development of skills in web-based platforms, with practical gains in reducing the anxiety of professionals and an increase in emotional management, with an impact on the better quality of the professionals' care [31]. This tool allows the transfer of theoretical knowledge to clinical practice while developing an EBP in professional care.

To facilitate this process, clinical decision support systems (CDSS) have emerged, intended to improve the provision of health services, improving medical decisions based on clinical knowledge, anamnesis and other health information [32]. Currently, these CDSSs make it possible to combine clinical expertise with the information or suggestions provided, verifying an evident resource to Artificial Intelligence (AI) in the conjugation, interpretation and reach of the data, actions almost impossible to be performed promptly by humans [32].

Visual perception, decision-making, and communication are tasks that AI has developed [33]. The high processing capacity of gigantic amounts of data created throughout the life cycle of patients allows, through the use of computer algorithms, the most accurate medical diagnosis, as well as pathological precision, resulting in time gain, less margin of error, specific pathological diagnoses, classification of lesion type, therapeutic prediction and disease prognosis [34, 35].

Accessing this new paradigm is only possible through substantial investment in technology, an aspect that is often unaffordable by health institutions. CDSSs bring benefits such as they reduce the incidence of prescription errors (patient safety), guides to clinical guidelines for action (clinical management), reducing the duplication of unnecessary exams and treatments (cost management), automation of processes (systems process),

diagnostic support, patient decision-making, procedural documentation, and improved care [32]. According to the same author, there are also disadvantages to its use, a topic developed further on.

Some CDSSs install apps on mobile devices, promoting quick access to knowledge and upgrading that same knowledge. Several studies have reflected on the benefits of using clinical decision support apps on mobile devices, enabling effective and efficient decision making [36, 37].

Several systems are on the market, such as DynaMed by EBSCO Clinical Decisions, Update Health USA, BMJ Best Practice and VisualDx, all with mobile access. Some studies compare characteristics between different systems, such as the frequency of updates, clinical topics, peer review and evaluation of evidence, the number of journals monitored, among others [38].

The use of diagrams, drawings and graphs when disseminating scientific evidence is helpful in the perception and dissemination of knowledge, as they allow quick visualisation of the evidence, aggregating the results and synthesising concepts and information [39].

Understanding knowledge when transferring it to a specific context requires wisdom and expertise. It is necessary to match the evidence found to the contextual reality, assessing needs, concerns, skills, socio-political power and the organisation in its natural context [40]. Partnerships between academic institutions and health organisations emerge as a logical method to respond to difficulties in planning, execution, analysis, and disseminating knowledge integrated with a context.

The New technologies applied to health and consumer demand changes in professional nursing practices and service models to respond to specific clinical needs and a better quality health system with better cost management [41].

This emerging technology abbreviates some of the tasks that overwhelm professionals have and divert them from clinical care that supports client health and well-being [41]; on the other hand, it poses challenges to health care knowledge translation in the digital age. The existing skills in articulating nurses, teachers, and researchers are aligned for change, focusing on practice and experience needed by clients and their communities.

The use of digital platforms allows all those involved in the process, regardless of whether it is synchronous or asynchronous. Online contexts bring new challenges; due to the absence of physical interaction, virtual environments impose different characteristics on research [42], which is why we consider it essential to reflect on this new reality. It is crucial to ask ourselves what to investigate, which research methodologies and strategies are the most appropriate, and the role of the researcher and the participants.

The literature suggests that we must consider using several instruments simultaneously in data collection, innovative technological skills, the monetisation of online resources, and the digital transition of organisations supported by industrial 4.0. Pereira, Cardoso, Monteiro, and Pombo [42], report some experiences of observation and Design-Based-Research in an online context, emphasising that data collection techniques should not focus only on a single type of instrument and that the researcher by nature is a participant-observer who can assume various roles (administrator of the digital platform, researcher, participant) and promotes the interaction of participants and the community.

Today, online data collection research is considered a cheaper (save effort, time and money), faster and more convenient method for accessing participants, easier to collect large-scale data very quickly, and receive information from difficult-to-reach and traditionally underrepresented populations [43]. The online questionnaires can also be the easy way to acquire consent for research, as it is automatically requested, which helps the transcription of responses and the respective data processing. Studies must always have software to support data processing and analyses, whether qualitative or quantitative.

With the rise of the Fourth Industrial Revolution, known as Industry 4.0 (I4.0), different types of communication technologies were put at the citizen's service, allowing greater flexibility and speed in processes, services, and products [44].

One major issue, especially problematic for online data collection research, is the reduced levels of control compared with offline methods. This arises due to technical issues, such as different hardware and software configurations, network traffic performance, and low mastery of technology [45]. The lack of direct researcher presence has potential implications, which may hamper qualitative research goals regarding the extent to which researchers can gauge participants' intentions, and levels of sincerity and honesty during a study [46].

We agree with Wa-Mbaleka and Costa that despite all the challenges COVID-19 has presented, there are many opportunities for qualitative research because it deals with complex issues. The pandemics have created many complex problems that people are living with [46]. We agree that qualitative research should play an essential role during a disaster such as this pandemic.

Authors also state that technology is now available to collect data without meeting anyone physically [46]. This can also be seen as a limitation because qualitative research needs face-to-face contact and the experience of the field, contributing to the greater rigour in the study. The virtual/digital world can be used for planning, establishing previous contacts, and validation.

Most issues or problems that arise in health care settings, even before the pandemic, inevitably imply working in partnership, where communication and articulation between professionals, the patient and the family play a crucial role. This work suggests the blurring of the traditional role attributed to the researcher. It creates a commitment between the researcher and the clinical professional, and it means the researcher's presence in context, even if the context is virtual [2–4]. Thinking about the whole process of qualitative knowledge translation, especially in identifying research needs, the transfer and implementation of knowledge [6, 7], collaborative work is vital for the success of the process.

Although this limitation, the virtual world is a current reality and is here to stay.

4   Final Considerations

This article leads the research team to reflect on knowledge transfer and the opportunity to use digital alternatives due to the pandemic. It's important for a truly bet on Evidence-Based Practice that the formation and health policies can support researchers, not only in the development of knowledge but also in its transfer to the clinic and implementation.

Even with the on-line challenge it´s important to build relationships and partnerships with clinical contexts and technologies, to increase dissemination and implementation of new knowledge, strengthening networks and involving citizens. In the future, even in the in disaster situations, if these relationships are sediment they will enable clinical and research's for a joint work with a search for solutions and problem solving quickly, safely and based on evidence.

After the pandemics, qualitative research will not be the same. Theorists, methodologists, and researchers need to discuss the strengths and weaknesses of conceptual frameworks, methods and techniques. The metaverse has opened a new world of unknown limits that affect human reality and the ways of the living society, with complexity also still unknown. This is an opportunity for qualitative research, new methods and techniques, and new knowledge development.

We believe that these new nuances of human and virtual life can only be understood by study designs that include, in part or in totality, studies of a qualitative nature.

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Social Network Analysis and Its Applicability by Means of NVivo Software

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Abstract. The aim of the article is to present tools designed for social network analysis, i.e. analysis of connections between people or other social entities. We explore this analysis to the extent that it is tractable by means of solutions available in the NVivo software. We begin by outlining the emergence and key assumptions of social network analysis, sometimes referred to as network or structural analysis. Subsequently, we present basic concepts as well as metrics describing the location of nodes in analyzed structures. Finally, we discuss the types of networks that can be created in NVivo, illustrating them with examples.

Keywords: Social network analysis · Sociogram · Caqdas · NVivo

1 Introduction

The intense expansion of network research is part of a more generalized shift that has been rippling through science since the mid-twentieth century. It involves the departure from individualistic, atomized theories towards an inquiry vested in understanding relationships or context and providing a systemic account of the phenomena under study (Borgatti and Foster 2003). This perspective has given rise to many sociological and psychological theories that refer to the conceptual framework of networks and explain social phenomena in terms of relational and structural factors (Monge and Contractor 2003). Network analysis is based on the assumption that patterns of relationships between people as well as between social groups are not random and can be mapped.

The way in which individuals act and groups function largely depends on what relations they forge with other subjects or communities. It is also conditional on the characteristics evinced by such affiliated individuals/groups. The volume and quality of social contacts as well as communication structure bear on social processes such as the exertion of social influence, information flow or the spread of innovation.

The position held by an individual or a group within the structure reflects the structural opportunities and constraints it experiences (Batorski and Zdziarski 2009). Social network analysis serves to model social structures as well as to point to the interdependencies of these models with other variables and with the alterations within the structure itself.

Since network analysis proves universally applicable to various types of entities and processes, the popularity of this approach continues to grow. This trend is further reinforced by the development of CAQDAS tools, which are successively being equipped with functions enabling network analysis. One of the leading programs used by academics from a variety of scientific disciplines and researchers working outside of academia (in commercial companies, public institutions and NGOs) is NVivo.

The NVivo Plus version (we refer to the NVivo 12 version in this article) comes with a very handy tool for creating sociograms, i.e., graphical representations of connections between people or other entities. Three types of sociograms may be rendered by means of a tool dubbed Social Network Analysis: Egocentric, Network and Twitter sociograms. The two former visualize the relations within a group of entities, whereas a Twitter sociogram accommodates data derived from Twitter and retrieved via an instrument called NCapture[1] (Niedbalski and Ślęzak 2020).

In recognition of the increasing prevalence of CAQDA tools use for network analysis, the main goal pursued by us in this paper is to present the options and modes of applying selected NVivo Plus features for creating sociograms. Our considerations are not grounded in any particular research method.

We only outline specific features of NVivo that may be useful to researchers interested in social network analysis.

2   Background

This paper is inspired by current trends in social sciences, which have been rapidly developing in numerous academic centers abroad for several decades. Academic courses and workshops for novice CAQDAS users, which we have been conducting for many years, were also a source of our inspiration. We can observe the expectations of our students in terms of the software and that they are increasingly interested in NVivo's capabilities in the field of creating sociograms. Hence, we attempted to present the procedures for applying network analysis and their usefulness in qualitative research based on the solutions implemented in NVivo.

3   Network Data

A researcher seeking to discover patterns of interaction between people or organizations can use sociograms, which are graphical representations of various types of social networks.

Networks are made up of entities, also called nodes, objects, or actors, and relations between them, called edges. The entities of the network can be individuals, teams of people, companies, regions, countries, international organizations, or NGOs, but also articles, websites, games, sport events, ideas, concerts, or films. Relationships analyzed from

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[1] NCapture is a free browser extension that supports the process of importing data from the Internet. It is worth noting that NCapture can be used independently as an add-on even if NVivo is not installed on the computer.

a network perspective may involve cooperation, conflict, participation in joint ventures, exchange, transactions, trust, belonging, support, communication, or competition.

The entities and relationships examined can therefore differ greatly, with the possibilities listed here hardly regarded as exhaustive. This method of social network analysis makes it possible to examine not only whole groups or isolated cases, but also indirect dependencies between objects otherwise unconnected by a direct relationship. Social network analysis brings into consideration the context of these relationships and the respective individuals alike. This is salient inasmuch as context oftentimes drives the way an entity behaves and affords a much clearer explanation thereof than does a mere analysis of the attributes depicting the entity. At the same time, it is also worthwhile to analyze how the attributes of the entities are related to their location in the structure of the network under study.

The simplest networks are groups of actors who are connected by a single relationship observed at a specific time. Such a model can be extended in various directions. Firstly, relationships can have a specific value or weight. Secondly, the same set of entities can be bound by different types of relationships. In addition, we can study the density of the network, distinguish subgroups with stronger internal ties, analyze whether the network is centralized, divided into centers and peripheries, or rather cohesive, and, finally, we can investigate whether relationships are narrowly specialized or multifaceted, and how indirect connections affect the behavior of actors.

The above issues are reflected in NVivo functionalities, where a typical sociogram consists of two main categories of elements:

(1) Vertices - representing a person, group, or other entity. In NVivo, vertices are cases (or, for example, users of a social network).
(2) Edges - representing connections or interactions between vertices. In NVivo, edges are relationships (or posts, tweets, mentions on a Twitter or Facebook sociogram). Edges can have arrowheads to indicate the direction of relationships (Fig. 1).
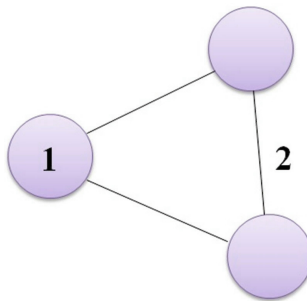

Fig. 1. Schema of a sociogram in NVivo.

In the network approach, it is necessary to identify the most important formal properties of the relationships that constitute the network subject to analysis. These formal properties determine which methods of analysis can be applied. The key issue is to define