Virtual Postgraduate Course on Research Paradigms: a cuban experience in times of pandemic

Postgrado virtual sobre paradigmas de investigación: una experiencia cubana en tiempos de pandemia

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Abstract

The article aims to assess the relevance of the postgraduate course on research paradigms in times of Covid 19, carried out at the Medical University of Havana between May-July 2021. From a qualitative approach, the emergencies that led to the design of the postgraduate course were systematized from virtuality. The interweaving of positions and approaches of numerous authors about the events related to the aforementioned disease is addressed, as well as the awareness of the need to rethink the research paradigms in the face of the global health emergency. The validity of the experience allows its continuity and improvement.

Keywords: research paradigms, science, education, virtuality, pandemic.

Resumen

El artículo se propone valorar la pertinencia del postgrado sobre paradigmas de investigación en tiempos de la Covid 19, realizado en la Universidad Médica de la Habana entre mayo-julio del 2021. Desde un enfoque metodológico cualitativo, se sistematizaron las urgencias que con llevaron al diseño del postgrado desde la virtualidad. Se aborda el entretejido de posiciones y enfoques de numerosos(as) autores(as) acerca de los acontecimientos vinculados a la mencionada enfermedad, así como la toma de conciencia sobre la necesidad de repensar los paradigmas investigativos ante la emergencia sanitaria global. La validez de la experiencia permite su continuidad y mejoramiento.

Palabras clave: paradigmas de investigación, ciencia, educación de postgrado, virtualidad, pandemia.

Introduction

A coronavirus called SARS-CoV-2, of beautiful and extravagant appearance, burst onto the scene in 2020 to steal the spotlight of planetary life. As if all the problems of the globalized world were summed up in it (Medina, 2021a). In the opinion of Maldonado (2021a), the pandemic crisis once again made it evident that there are unforeseen phenomena in health matters, and these cannot and should not be neglected. Covid-19 took everyone by surprise; not even the best scientists in the world saw it coming. Neither were there, at first, vaccines or definitive solutions for the global health crisis that had occurred.

Such events once again put at the center of debates the issue related to the validity of scientific paradigms. This matter is of vital importance for research (in the search for drugs and technologies for the treatment of symptoms and sequelae of the disease). By then, the debate on paradigms permeated all spheres of social life, particularly education (in its pedagogical and didactic dimensions).

There were many questions in a short time: How prepared were we, the medical university teachers, to understand the pandemic crisis from the sciences? How to prepare ourselves in record
time to research and publish from the respective areas of knowledge? How to assume the impacts generated and continue the formative processes from virtuality?

The article presents the proposal for a virtual postgraduate course on the need to rethink research paradigms in the face of new emerging realities resulting from the Covid-19 pandemic. An evaluative analysis is made of the technological supports available for its teaching, the contents addressed, the main didactic and scientific proposals made by the participating teachers in its first edition. A final feedback is provided. The experience took place at the University of Medical Sciences of Havana (UCMH), in its Faculty of Health Technology (FATESA).

Cuban medical education occupies a leading place in the Latin American continent as it trains Cuban professionals and those of other nationalities to practice social medicine, through training in various higher health technicians and more than ten university degrees (medicine, stomatology, nursing, physical therapy and rehabilitation, hygiene and epidemiology, health information systems, among others).

Cuban medical education is recognized for applying the guiding principle of education in work and for work, during the student stage, and with the provision of health services within Cuba and internationally. Due to the variety of specialties offered, it is institutionalized in 13 faculties, and the teaching staff is in turn very heterogeneous in terms of specialties and academic training.

It is important to highlight that at the time of delivering the postgraduate course, the teachers were with the students, conducting active searches for the prevention and detection of Covid-19 cases and teaching virtual classes. The times and spaces, the formats and dynamics, the domestic and the institutional, the data and experiences, the public and the private; all strained the field of medical education.

This particular labor characteristic influenced, along with technological limitations, the lack of informational literacy of part of the faculty (aged moreover) and the limited dissemination that could be done to postgraduate studies, so that only 12 of the 25 available places were covered.

From a qualitative point of view, it can be considered that the course's realization was optimal and enriching since the enrolled teachers, male and female, are all scientific leaders who have academic degrees of doctorate or master's. They also hold responsibilities such as: (a) head of the postgraduate department and methodologists of the same, (b) head of the English department for specific purposes, (c) teachers of the careers: health information systems, health rehabilitation, hygiene and epidemiology, and pharmacology.

The methodological design and pedagogical strategy for the postgraduate implementation began with an interdisciplinary effort to articulate problems studied by different areas of knowledge: research methodology, critical epidemiology, international health, and social problems of science and technology (PSCT).
Some features of virtuality at the University of Medical Sciences of Havana (UCMH) during the pandemic

The first reactions of Cuban university institutions to the sanitary measures dictated by international organizations and applied by the government, were not much different from those experienced in other latitudes and were, as expected, contingency. Rapid curricular adjustments were requested for virtual proposals, in order to take full advantage of the available technological support.

Amid such unprecedented circumstances, it was necessary to become more dynamically aware of the need to do science and rethink how to focus research in new contexts. Something that Puiggrós (2021) calls for when questioning teachers about the imperative to articulate new interweaving’s and enunciations between the terms: contingency - experience - inheritance – creation, in current pedagogical and scientific debates.

As pointed out by Coicaud, Martinelli & Rozenhauz (2021), working in virtuality requires recurrent updating, demanding clear policies and decisions, because universities do not change without the commitment of teachers, nor these without the institutions. Their appropriation to transform teaching is a process that takes time. However, we believe that crises can generate and motivate growth opportunities both institutionally and personally. Goals that are prolonged over time sometimes dissolve, while they can gain strength and astonishing momentum in urgent moments.

Once the most critical stage of the pandemic has been "overcome," in times of recovery or presumably post-pandemic, it is imperative to systematize applied experiences to signify how much of what has been done acquires connotation to be normalized in pedagogical practices.

Both at the postgraduate and undergraduate levels, this jolt that we still live outlines the imperative not only to train in the subjects we teach but to seek dialogues of knowledge through interdisciplinary and even transdisciplinarity. On the other hand, to rid ourselves of the reproduction of information, boring classes, and innovate more effective methodologies but always connected with the purposes and the educational context in which we act. Publishing to interconnect also becomes an unpostponable habit.

Cuban medical education takes place in a country blocked by the US government for over 60 years. Simply put, this means being subject to a cluttered legal framework that has extraterritorial character and affects all of Cuba’s economic and commercial relations on the international stage (which can be cataloged as the longest and most enduring economic war since the post-war period). The blockade also affects multidimensionality all social spheres (access to ICTs, in the ideological-cultural: feeling of a besieged square, among others).

The access of education in general, and medical education in particular, to the use of ICTs for educational purposes, is still limited. In the last five years, state investments have been made in the telecommunications branch, and capacity has been increased to provide services. Despite the efforts of the Cuban state to expand connectivity and computerization of Cuban society, it is still far
below what is aspired to and needed. In Cuba, connecting to the internet from mobile phones is still expensive, although with a sustained trend towards price reduction. Students and teachers have 2G, 3G or 4G depending on the availability of phones, which are mainly imported by travelers or relatives (sometimes used). The internal retail market for computer and mobile phone equipment is very limited.

Given this situation, it can be affirmed that, through face-to-face modality, it is unlikely to use the internet sustainably and in real-time in all the dozens of educational scenarios of medical education, as the university is located not only in the faculties but in numerous accredited formative spaces for it: hospitals, polyclinics, medical offices (among other health institutions).

For certain prioritized disciplines, the goal is to intentionally ensure such access through the distribution and use of the institutional technological base, with criteria of rationality and efficiency. In remote or virtual modalities, there is not, for the most part, an access option or the technological support to transmit - in real-time or synchronously - video conferences or online workshops; using ZOOM or other platforms. The asynchronous use of the Virtual Health Classroom (AVS) predominates, as part of the Virtual University of Health (UVS).

The UVS of Cuba was created in 2001 (Zacca, Diego & López, 2008), and its AVS is supported on the Moodle platform. The contingency arising from the epidemiological situation allowed its expansion and encouraged its use not only for postgraduate activities but also for undergraduate ones.

The didactic resources for the design and implementation of virtual courses are concentrated in the following didactic units: a general guiding guide for the course in question, with the design of activities to be developed by the students (both self-control and evaluative tasks to be delivered and their corresponding schedule) and the general available bibliography. Each topic includes a folder containing: a specific guiding guide, bibliography (both basic and supplementary); as well as the conferences (in PowerPoint or in PDF format).

A general course forum is usually designed, as well as evaluative or non-evaluative forums for each topic; that allow interaction (asynchronous) between teachers and students. The teachers, who are participating in virtual education for the first time, design the courses and simultaneously train in the mastery of the Moodle 3.0 platform. There are other available resources that are still pending use due to limited available technological capacity, and/or because they require continuous learning processes on the part of teachers and students.

**Program design**

The course on *rethinking research paradigms in the face of new realities* focuses on the logic of research (conceiving it as a higher moment in research methodology). In its program, it is clarified that it does not constitute a basic methodology course, as it is considered that the students have already overcome this level of preparation for research. It includes unusual critical exercises in
postgraduate health studies, referring to the approach of different research paradigms, current methodological debates; and the reconsideration in the face of the new circumstances that the world in general, and health processes, in particular, are experiencing in the current scenario.

It is conceived as a space for updating on new perspectives in health-related research. It also emphasizes that each student should exemplify, from their specialty and in dialogue with others, possible problems that can be researched with new interwoven perspectives by the participants.

The proposal for the postgraduate program is structured around three themes:

Theme 1, *Scientific Research and Paradigms*, consists of three lectures. In the first, rather than providing concepts, opinions of various authors are articulated about the main paradigms: a) positivist or quantum, b) qualitative, c) critical, and d) complexity. Among them are highlighted: Almeida (1992, 2007), Melero (2012), Colmenares (2012), Sequera (2014), Breilh (2015), Torres (2015), Maldonado (2016), Basile (2020). The main conclusion that is reached rests on the non-obligation to adopt a paradigm in an absolute way, but its use must respond to the research topic and the scientific problems to be solved, for which the understanding of the need for mixed methodologies is suggested (Muñoz, 2013; Núñez, 2017).

In the second and third conference of topic 1, we reflect upon the following axes of debate and authors:

- The relevance of Morin's idea (1984) about how the enormous mass of quantifiable and technically usable knowledge is nothing but poison if deprived of the liberating force of reflection.

- Science and the production of scientific knowledge are changing, and this shows that the identity crisis of contemporary science is a crisis of growth, a new mode of producing and legitimizing knowledge and technology (Morin & Delgado, 2017).

- The discovery of the essential components of a complex process doesn't arise from a simple accumulation of data. An excess of irrelevant and disconnected data often takes the form of ignorance. The search for essences is an act of intuition and creativity. The proposals that stem from this will be validated later (or not) by new concrete experiences (Lage, 2018).

- More often, natural sciences, engineering, social sciences, and humanities collaborate to address important complex problems (Estévez, 2019).

- The absence of a common language between "natural sciences" and "human sciences" makes it difficult to achieve internal coherence that would allow both to not mutually dismiss each other. The division between these disciplines isn't inherent to science itself or the humanities, but rather created by those who practice it (Zamora, 2019).
• Reinterpreting Kuhn (1971), it can be affirmed that scientists work based on models acquired through education and subsequent exposure in scientific literature, often without fully understanding or needing to understand the characteristics that have granted these models their paradigm status in the community. This could explain the non-obligatory nature of routinely following all procedures of each paradigm, and furthermore, the coherence displayed by the research tradition they participate in might not even imply the existence of a basic set of inviolable rules (Medina, 2021a).

• Constant return to research praxis is necessary because the role of the human component is decisive. The need for scientific leadership, researcher motivation, and commitment are essential. Without these, no possible change or adoption of new paradigms can occur, which ultimately materialize into modes of professional action (Medina, 2021a).

In Topic 2, Scientific Research and Methodological Designs, the relationships between methodological design and research logic are explained, seeking plural views on a subject in open discussion, but not for that reason avoidable. Among the main authors to be studied in Topic 2 are: Cascante (2011), Corona (2017), Piovani & Muñiz (2018), Cornejo & Rufer (2020).

In Conference 1 of Topic 2, in the face of so many definitions about science, it is summarized that it is an intentional activity structured to produce new, pertinent, and socially significant knowledge. The main focus is not on the methods or the instruments with which reality is explored, but on the logic with which it is conceived to approach the problem to be studied. Rather than talking about methodology, one should talk about the logic of research, as the design must function as a flexible, dynamic system; where all the components and parts of the process, and their results (presented in the final report) are interconnected horizontally. This should ensure clarity, articulation, and scientific solidity. The importance of the scientist's creativity and ability to formulate good questions is also emphasized, which can be learned through many hours of study and research with successive approximations of what has already been formulated. In addition, one must train in the exercise of choosing and evaluating.

Conference 2 of Topic 2 proposes to characterize the methodology of horizontality, as part of the emerging methodological approaches being developed in the world. It insists on banishing the fear of diversity in methods and techniques, as the traditional idea of seeing it as a weakness can be its distinctive quality. Such a stance contributes not only to dialogue among researchers but also to building encounters with all those involved in the problems being investigated. It also opens a door to discursive equity and the autonomy of plural voices, born from bringing together various disciplines embodied in groups that surpass interdisciplinary intentions and can define what must be built with knowledge (including non-academic knowledge).

In Conference 3 of the aforementioned topic, the idea is further deepened when the link between horizontality, mixed methods, and reflexivity is unfolded. Initially, a historical-logical approach is taken to three essential moments in the discursive construction of methodological debates: the quantitative consensus in social sciences of the first half of the 20th century, through...
methodological triangulation and quasi-qualitative combinations (predominant since approximately the 1960s of the last century), to debates on triangulation and articulation of mixed methods (in the 1990s).

On the other hand, it is clarified that mixed design is not reduced to uniting the results obtained through dissimilar paths but requires integration at all stages of the research: (a) design, (b) material creation, (c) participant recruitment, (d) data collection, and (e) own analysis. Mixed methods are not inherently more or less valid than each specific research approach. Validity rests more on the suitability, comprehensiveness, and effectiveness with which these methods are applied. An open question for the next topic is what enigmas permeate the debates in pandemic times.

Topic 3. *Contexts and Dilemmas of Scientific Development in the World and Cuba, in Pandemic Times*; focuses its analysis on the multidimensional context of the global crisis in which the pandemic emerges, the impacts, and urgencies that this health catastrophe imposed on the field of health services and research, as well as medical training. It also accounts for the scientific advances experienced in the period. Among the authors dialoguing are: Maldonado (2021b), Martínez (2021), and Machado (2020).

The mentioned topic has 2 conferences and focuses its view (among others) on the following axes:

- The pandemic of the new coronavirus can be classified as unprecedented. It has generated a state of global alert (Breno & Geoffrey, 2020).

- The current emergency is not only a health crisis. It is what social sciences qualify as a total social fact, in the sense that it transforms the whole of social relations, and shocks the entirety of actors, institutions, and values (Ramonet, 2020).

- In its global reach, Covid-19 represents an unprecedented situation for the world. Diseases of the utmost severity, such as Ebola, did not receive as much global and media interest, as they were confined to a forgotten continent like Africa (Medina, 2021b).

- Intellectual, academic, and political debates oscillate between corona-optimism and corona-pessimism (De Sousa, 2020).

- The growth of open science networks, publications, research, and the record time achievement of vaccines to immunize against Sarcov-2 have been great feats. Meanwhile, the unequal distribution of vaccines, the commercialization of drugs, and the health policies of most governments, have evidenced inefficiencies (Basile and Feo, 2021).

- Cuba is the only Third World country with five vaccines, and such high levels of immunization. Cuban biotechnology has also produced various drugs for the symptoms of the disease (Medina, 2021a).
During the three topics, participants can contribute their experiences and opinions through three debate forums and a final integrative workshop; the most significant contributions are compiled below, as well as the criteria expressed in the feedback of the first edition carried out from May to July 2021.

**Program design**

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**Experiences in postgraduate teaching**

The first debate forum asked participants to respond to the following statement: Evaluate the importance of deepening your understanding of research paradigms for your training. We highlight some of the main ideas below:

• *I am very interested in the approach of studying various paradigms to update myself and write articles and papers for events, where not only numbers are handled but also experiences, narratives; which is not very common in medical sciences.*

• *The Health Information Systems (SIS) career has three profiles. In the first, related to statistical systems (SIE), statistics predominate, but in scientific information and health librarianship, qualitative assessments and criteria are essential. In Informatics, the combination of both paradigms would be exciting. This postgraduate opens new ways to work in our career.*

• *Mastery of research methodology is vital for efficient project development and publication. In the specialty of Hygiene and Epidemiology, quantitative paradigms have long predominated. But with this course and other knowledge, we are learning that, along with statistics, it is necessary to deepen the qualitative analysis of health processes. And we must move towards mastery of methods and techniques more tailored to complex dynamics like the pandemic.*

• *I consider the critical paradigm important in health and pedagogical sciences, considering that the critical approach is characterized not only by investigating, obtaining data, and understanding the reality in which the research is inserted but by provoking social transformations in the contexts in which it intervenes.*
In forum 2, it was asked: Illustrate the usefulness of horizontal methodology, and mixed methods, in your specific field of research:

- I had never deeply questioned the importance of involving students in our research, from an active role. And understanding that horizontality can also be used in medical education research is a broad field for conducting research with new approaches. And I think all this also points to interdisciplinary between health sciences and social sciences, as these more qualitative methods have been developed from the field of the latter.

- Through the lectures on the second topic and consulting the book on Horizontal Research, we have learned that peer research allows the participants' perspective. Sometimes we apply surveys or other instruments, and we do not thoroughly prepare the subjects who participate, and they do not even understand well what the research is about.

- I find the use of methodology and mixed methods in the care area interesting, considering that one of their uses is research in health services, which aims to obtain valid and reliable information to make decisions on how to efficiently and acceptably organize health systems, with the main concern being the quality of care provided to the population.

In forum 3, it was asked: What is the usefulness of reflexivity as an approach, for conducting research in your professional field?

- Health rehabilitation is related to secondary prevention. It means that the sick individual is known, and new complications are prevented. Reflexivity is the action of problematizing the function of the researcher. In this case, the social conditions surrounding the individual and their lifestyle must also be considered to influence their recovery. The health conditions in which the patient is found are multifactorial, so they do not respond to a universal pattern; their identification must be individualized.

- Reflexivity is vital in database research and countless statistical processing through ICTs. Like the topics related to Cyber security, regulations and ethical norms in the use of information, and other phenomena transversed by social mechanisms such as the use of digital networks.

- The power of statistical data is overemphasized, both in health research and in educational research. In the latter, the individuality of the student is quite forgotten, and the results are overly standardized, considering that they can be mechanically applied to other contexts. I find this very useful, for example, for the subject Quality of Information, where the integrity, truthfulness, and traceability of health information must be assessed.

- The mixed approach and reflexivity in pharmacological studies offer advantages by having a variety of observations derived from different sources, types of data, and contexts. It produces richer information, allowing research to be more interpretive concerning the different individual reactions to various drugs under study.
The final integrative workshop asked that, based on the professional and investigative scope, they exemplify how they would apply the elements studied in the three topics. The proposals were somewhat general still. They focused more on integrating the utility of the contents addressed throughout the postgraduate course and on becoming aware of the displacement of enunciation during future research processes. As well as highlighting the creativity of the postgraduate as a theoretical effort that not only cited authors but approached thinkers who articulate paradigm shifts, as confluences and disagreements.

Also, the possibility of learning about mixed methodological designs was highly valued, and intertwining opinions from the different professional knowledge gathered in the first virtual postgraduate on research paradigms, carried out at the Faculty of Health Technology, UCMH. Everyone asked that learning continue through advice or new postgraduates, which is already being done through tutoring new research works, advice for publications, and planning the second edition of the postgraduate course.

Finally, it should be noted that the course's closing coincided with the most severe moment of the pandemic in Cuba. The following opinion from one of the participants expresses this:

> The topics debated in the forums were extremely interesting, and we, the participants, must propose from our areas of action that another version be carried out in which at least the heads of our faculty departments participate, so that they can multiply experiences and knowledge. Take care to keep doing and be able to tell the story when this tough moment passes.

**Conclusions**

The postgraduate program of rethinking research paradigms in the face of new realities was a proposal put forth during times of contingency, aiming to provide educators at UCMH, under conditions of social distancing, with: a) novel methodological resources for understanding the causes of the epidemiological emergency from a scientific standpoint, b) encouragement to carry out research and publications in a more dynamic manner than usual, given the warranted situation.

The writing of this current article has allowed us to delve into what has been achieved, in order to be certain that beyond the eventualities that occurred, this experience is valid and allows for its continuity and improvement. In the upcoming second edition of the postgraduate program, the bibliography should be updated with new publications on the behavior of SARS-CoV-2, as well as rethinking certain didactic activities and enhancing dissemination, since the expansion of virtuality is one of the positive gains that the pandemic has left us.

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