

ARTICLE

PANDEMIC, MATERNITY, AND SCIENCE: EXPERIENCES AND REFLECTIONS OF MOTHER SCIENTISTS AT THE FEDERAL UNIVERSITY OF THE PAMPA¹

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ABSTRACT: The pandemic context has transformed the social reality and interpersonal relationships, mainly through the measures of isolation and social distancing, necessary for the containment of the virus. With remote work and the intensification of family life, the gender inequalities related to the sexual division of labor have been accentuated, which over-loads women due to the unequal responsibility for the care of private life. The present article, of an exploratory qualitative nature, aims, through the use of questionnaires, to investigate how the pandemic has impacted the careers of scientist mothers, professors at the Federal University of the Pampa, analyzing how these researchers reconcile remote teaching and other demands of a scientific career with motherhood. We noticed, through the research, that the pandemic impacted not only the career but also the mental and physical health of the participants, as it overloaded them beyond professional demands, as well as with the demands of the private sphere, such as domestic care and of the daughters, assumed mostly by them.

We noticed, through the research, that the pandemic has impacted in some way the careers of the participants, starting with the lack of time for the fulfillment of professional activities, domestic and childcare, thus intensifying the work overload and the impacts on the mental health of some of the participants of the study.

Keywords: Pandemic, Science, Women, Maternity

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PANDEMIA, MATERNIDADE E CIÊNCIA: EXPERIÊNCIAS E REFLEXÕES DE CIENTISTAS MÃES DA UNIVERSIDADE FEDERAL DO PAMPA

RESUMO: O contexto pandêmico, transformou a realidade social e as relações interpessoais, principalmente por meio das medidas de isolamento e distanciamento social, necessárias para a contenção do vírus. Com o trabalho remoto e a intensificação do convívio familiar, acentuaram-se as desigualdades de gênero relacionadas à divisão sexual do trabalho, que sobrecarrega as mulheres diante da desigual responsabilização pelos cuidados com a vida privada. O presente artigo, de natureza qualitativa exploratória, objetiva, a partir do uso de questionários, investigar de que forma a pandemia impactou a carreira das cientistas mães docentes da Universidade Federal do Pampa, analisando como essas pesquisadoras conciliam o ensino remoto e as demais demandas da carreira científica com a maternidade. Percebemos, por meio da pesquisa, que a pandemia impactou não somente a carreira, mas também a saúde mental e física das participantes, na medida que as sobrecarregou para além das demandas profissionais, como também com as demandas do âmbito privado, como o cuidado doméstico e das(os) filhas(os), assumidas majoritariamente por elas.

Palavras-chave: Pandemia, Ciência, Mulheres, Maternidade

PANDEMIA, MATERNIDAD Y CIENCIA: EXPERIENCIAS Y REFLEXIONES DE MADRES CIENTÍFICAS DE LA UNIVERSIDAD FEDERAL DE LA PAMPA

RESUMEN: El contexto pandémico ha transformado la realidad social y las relaciones interpersonales, principalmente a través de las medidas de aislamiento y distanciamiento social, necesarias para la contención del virus. Con el trabajo a distancia y la intensificación de la vida familiar se han acentuado las desigualdades de género relacionadas con la división sexual del trabajo, lo que sobrecarga a las mujeres por la desigual responsabilidad en el cuidado de la vida privada. El presente artículo, de carácter cualitativo exploratorio, tiene como objetivo, a partir del uso de cuestionarios, investigar cómo la pandemia impactó en la carrera de científicas docentes de la Universidad Federal de Pampa, analizando cómo estas investigadoras concilian la docencia a distancia y las demás demandas de la carrera científica con la maternidad. Notamos, a través de la investigación, que la pandemia impactó no solo en la carrera, sino también en la salud mental y física de los participantes, ya que los sobrecargó más allá de las exigencias profesionales, así como con las exigencias del ámbito privado, como el cuidado doméstico. y de las hijas, asumidas mayoritariamente por ellas.

Palabras clave: Pandemia, Ciencias, Mujeres, Maternidad

INTRODUCTION

The consequences of the infection caused by the SARS-CoV-2 virus, the causative agent of COVID-19, which showed its first signs at the end of 2019 and spread throughout the world in 2020, have marked world history due to the challenges and transformations it caused. In March 2020, the World Health Organization declared the disease a pandemic. In this context, we noticed, for example, the worsening of problems such as poverty and failures in health systems, as well as the accentuation of inequalities and social issues and the scrapping of science in several countries, marked by a lack of investment (WOLFF et al., 2020). Without effective treatment and mass vaccination available to the population, measures such as social isolation, the use of masks, and the importance of hand and object hygiene were necessary to contain the virus, drastically modifying the social dynamics and relationships of the subjects within it (MALTA, 2020).

With social isolation being one of the necessary measures to contain the spread of the virus, remote work, and teaching, in all modalities, were alternatives during the pandemic reality so that daily activities could continue their “normal” flow as far as possible. As a result of this scenario, we highlight the deepening of gender inequalities related to the sexual division of labor because activities that were

previously carried out outside the domestic environment now must be carried out within the home, generating an overload mainly to women (ZANELLO, et al., 2022). However, as highlighted by Oliveira (2020), the pandemic was not the founding element of the problem, which only accentuates and exposes the challenges imposed on many women who are mothers, who are overworked in double or triple working hours.

Social conceptions about the sexual division of labor, constructed historically and culturally, for a long time, delimited women's spaces, imposing restrictions on them both in education that until the 20th century was focused on home and their children², in the job market³. In this way, we can say that the sexual division of labor “is the form of division of social labor resulting from social relations between genders; more than that, it is a priority factor for the survival of the social relationship between the genders” (HIRATA; KERGOAT, 2007, p. 599). According to the authors, the sexual division of labor has the characteristic of assigning men the productive sphere and women the reproductive sphere, from the perspective of being men's work and women's work (“the principle of separation), in which the roles of men have greater social value than women's (hierarchical principle).

Throughout the construction of science, combined with discourses and social practices related to the sexual division of labor, sexism, and scientific androcentrism brought significant consequences to women, and even today, they find it difficult to be in the scientific space in an equal way (BARROS; SILVA, 2019). Thus, with science historically formulated and organized based on masculine career precepts and values, it disregards the specificities of women, such as the experience of motherhood, which, for at least a certain period, requires physical dedication, mental and temporal exclusive to women. Furthermore, science also disregards the activities that society imposes and expects to be carried out by women who are not mothers, just because they are women, such as domestic tasks and caring for sick or elderly people.

With the pandemic and the need for social isolation, most academic-scientific activities such as guidance, writing articles, and preparing and teaching classes, began to be carried out remotely, mixing with domestic activities. Thus, in the context of women who work in the academic-scientific area, the reality of scientific work being carried out remotely, although it is new and a challenge for all, causes greater wear and tear on women, from the perspective that most of them assume responsibility for domestic and care tasks (WOLFF et al., 2020). It is worth reinforcing that the unequal accountability for work in private life, although accentuated during the pandemic, is a historical problem - although it has different manifestations depending on issues of class, race/ethnicity, historical context/generation - in which many women “do more than a journey, which extends from formal work to domestic activities, taking care of the house and children. In this way, women end up accumulating roles performed in the public and private spheres.” (DYNIEWICZ; RIBEIRO, 2020, p. 5)

Research such as that developed by the Parent in Science project⁴, which problematizes the female burden in reconciling motherhood with the scientific career of women researchers and higher education teachers, has already demonstrated that motherhood impacts the production of female scientists. In recent years, the theme of motherhood and scientific career is increasingly present on university agendas, through events, work groups, and research, which highlight and debate the relationship between motherhood and scientific career. Therefore, this article aims to investigate and discuss how the pandemic has affected the careers of scientist-mothers teaching at the Federal University of Pampa⁵ (Unipampa), reflecting on some concerns and problems related to the woman-mother-

² The gender bending in this text follows a feminist critical epistemological perspective with the purpose of giving visibility to women in scientific productions.

³ It is important and necessary to consider class and race when we mention the exclusion of women from the labor market, from the perspective that at the “beginning of the feminist movement, while white women fought for the right to vote, work and property, black women were not even seen as human beings and included in the demands” (GUIMARÃES; VERBICARO, 2020, s/p). In other words, historically, black women always carried out work beyond their private sphere, as wet nurses, slaves or domestic workers.

⁴ Further information is available at: <https://www.parentinscience.com/>

⁵ It has a decentralized and multi-campus structure, in the cities of Alegrete, Bagé, Caçapava do Sul, Dom Pedrito, Itaqui, Jaguarão, Santana do Livramento, São Borja, São Gabriel and Uruguaiana, totaling 10 campuses. Currently, the university has 69 undergraduate courses (4 in extinction), 4 doctorates, 10 academic master's degrees, 8 professional master's degrees and 35

scientist triad, such as sexual division of labor, motherhood, and scientific androcentrism, which result in the physical and mental overload of women.

METHODOLOGICAL PATHWAYS

This article refers to the research of an exploratory qualitative nature (GIL, 2002), anchored in Cultural Studies and Gender Studies, from a post-structuralist perspective⁶. According to Bujes (2007), research is born out of concern, it is based on a question for which we often already have the answers, but these no longer satisfy us, causing discomfort, concerns, and reflections in our trajectory. In this way, researching motherhood and science arises from a discomfort regarding situations of gender inequality, present both in society and in science. Furthermore, in the current pandemic context, it is necessary to equip ourselves with new research strategies, that correspond, with the limitations and possibilities, of investigating the problem in a pertinent way. From this perspective, this research, which was approved by the Unipampa Research Ethics Committee, was carried out using an online questionnaire as a data collection strategy.

According to Gil (2002), the use of tools such as questionnaires in exploratory research enables to study of characteristics of a group (gender, age, education level, etc.), as well as gathering information, beliefs, and opinions from them. Thus, we aimed, through the questionnaire, to draw an initial profile of the teachers at the Federal University of Pampa, as well as to investigate how the pandemic impacted the careers of these teachers and mother scientists, analyzing how they reconcile remote teaching and the other demands of a scientific career with motherhood. It is important to highlight that this research was approved by the Ethics and Research Committee – CEP, of the Federal University of Pampa, under number CAAE: 32895720.0.0000.5323.

The questions of the questionnaire that will have their data discussed in this article, firstly, aimed to outline a profile of Unipampa teachers, covering issues such as color or race (according to IBGE); age; the level of education (specialization, master's degree, doctorate or post-doctorate); if they work in postgraduate studies; whether they are productivity fellows and research leaders, as well as the area of activity of each one. Furthermore, the questionnaire covered issues related to science, scientific careers, and motherhood, with an exclusive section pertinent to reconciling scientific careers and motherhood in a pandemic context.

The questionnaire used in the research was formulated using the Google Forms tool and subsequently sent as a link to each professor's institutional email, which is available on the Unipampa website. In the body of the email, a brief presentation about the research was sent, as well as its objective and the link to access the questionnaire. It is important to highlight that before each teacher had access to the questionnaire questions, they had access to the Informed Consent Form (ICF) in digital format, which included, after describing all the information and clarifications pertinent to the research, the option for the invited participant to accept or refuse to participate in the study. Thus, the questionnaire was sent to 440 teachers, which represents the total number of female teachers on the 10 Unipampa campuses, remaining open during October 2020, that is, for 31 days, obtaining 89 responses from teachers.

As the interlocutors responded and completed sending the questionnaires, the data was received and stored in Google Forms, which later, after the collection period, generated a spreadsheet with data from each interlocutor, along with an identification number for each questionnaire. Therefore, in this article, participants' responses will be identified by the letter P (participant), followed by the participant's questionnaire identification number, along with age, area of activity, and number of children. Therefore, the description in the textual fragments assumed the following identification format as shown in the following example: (P2; 50 years old; Biological Sciences; 01 children).

specializations, and a total of 923 teachers distributed across the university's 10 campuses, 440 of whom are women. Information taken from the university website (<https://unipampa.edu.br/portal/#>).

⁶ Cultural studies, which investigate the relations between culture and society, anchored in the post-structuralist perspective, seek to question, problematize and criticize discourses, concepts, practices and social and cultural relations, previously recognized as unique and irrefutable truths, making their resignification (LOURO, 2000).

SCIENTIST WOMEN: (MIS)PATHS TAKEN IN AN ANDROCENTRIC SCIENCE

During part of human history, because of the division of public and private spaces as belonging to men and women, respectively, women were prevented from attending educational spaces, as well as working outside the domestic environment, receiving an education restricted to home care, their children and their husband (BIROLI, 2018). However, although this scenario of restrictions on teaching spaces has been present for most women throughout history, it is important to highlight that many women took part in the construction of scientific knowledge, even if in a restrictive and anonymous way. (SILVA, 2012). This presence was formulated through readings and research carried out in secret, together with their parents, brothers, and scientist husbands, as well as, with knowledge and practices that were not considered scientific, such as midwives, as well as knowledge about plants and agriculture (SCHIEBINGER, 2001).

The consequences related to the restrictions historically imposed on women in participating in knowledge production can still be seen today. As Olinto (2011, p. 69) argues, a series of discourses are still reproduced that produce values and beliefs that “form stereotypes about the differentiated abilities between men and women and influence the choices that women make early in their existence, establishing barriers that limit their life chances.” Gender representations, produced and reproduced through speeches, culturally impose an ideal pertinent to what it means to be a woman, a mother, and how to experience motherhood, causing women feelings of needing to take care of everything, being a loving mother and wife, careful and attentive, as well as a competent, helpful and successful professional.

According to Meyer (2005), in the 1960s, the feminist movement began to criticize the discourses and social practices that reproduced gender representations. This delimited women's spaces in the participation of knowledge, in addition to problematizing issues related to the division of work, the romanticization of motherhood, and scientific androcentrism. With the feminist critique of science, initiated in the second wave of the movement, androcentric science and biological determinism, which delegitimized women in science, began to be problematized, seeking to deconstruct the view that only men produce knowledge and that the woman's space of action is restricted to the domestic sphere. Therefore, it is important to highlight that feminism played an important role in several achievements related to women's rights, especially in their more active participation in science.

In this way, women have built and continue to build, through resistance and struggles, movements for change in breaking down barriers imposed on them historically, which is reflected in the increasing presence of women in higher education and science (BARROS; MOURÃO, 2020). According to data from the Higher Education Census (BRASIL, 2018a), women represent 57.2% of the country's undergraduate courses, with the majority also in postgraduate courses, with a number approximately 19% greater than men. However, they are outnumbered by men in higher education teaching, representing 45% of the teaching staff, a completely different reality when compared to basic education teachers, in which women represent 80% of teachers, according to the last school census of 2017 (BRASIL, 2018a).

Regarding the profile of the teachers participating in the research, 94% declared to be white; 5%, were mixed race, and 1%, were black. For this discussion, it is important to highlight the microdata released by the National Institute of Educational Studies and Research Anísio Teixeira (BRASIL, 2017b), which demonstrates that only 16% of the total number of higher education teachers declared to be black and data from Soares and Silva (2019), who identified in their research on race and gender at Unipampa, that only 5.4% of the total number of female teachers are black teachers and 4.6% of the total number of male teachers are black teachers. These data lead us to reflect on the racial inequality present in higher education teaching staff, and, intersecting race and gender, the low representation of black women in higher education teaching in general and especially at Unipampa, universe research of this study. This unequal reality reflects the structural racism⁷ present in Brazilian society, as well as the resistance of science to break with the inequalities arising from this racism (SOARES; SILVA, 2019).

⁷ We understand the concept according to Almeida (2018, p. 51), when he says that racism acts “as a historical and political process, creating the social conditions so that, directly or indirectly, racially identified groups are systematically discriminated against”.

From this perspective, we can say that the unequal scenario that exists in the social context is also reflected in the educational and scientific context. Therefore, the participation of women in science has increased in recent years; however, this increase clearly has color and happens mostly at the undergraduate level, decreasing as one advances in the career (BENEDITO, 2019) because, even though it is the majority in postgraduate courses, men are the ones who are in greater numbers teaching higher education. Furthermore, women have been occupying more and more space in universities; however, they are fewer in the most prestigious and powerful positions. This phenomenon is known as the “scissors effect”, which is, according to Benedito (2019, p. 8), the “term used to show how women are being expelled from science throughout their careers, preventing them from occupying leadership positions”.

Therefore, the scissors effect refers to the decrease in the number of women as the scientific career advances, occurring due to the difficulties they face along the way to the highest levels of the profession. Referring to the barriers that hinder or prevent women from rising to higher career levels, the term “glass ceiling” is used, which makes the “analogy to something subtle that can easily become invisible, but whose presence is capable of producing effects that make it difficult or prevent women from reaching more prestigious positions in organizations and science” (BARROS; SILVA, 2019, p. 71). Based on this concept, we emphasize that, even with women occupying scientific spaces in a more quantitatively equitable way, the most senior positions will be occupied mostly by men (SILVA; RIBEIRO, 2014).

Regarding age, most respondents are between 35 and 45 years old (53%), followed by 25 and 35 years old (22%), 45 and 55 years old (17%) and 55 years old or more (8%). Regarding the careers of these women, 10.6% of participants have a master's degree, 76.5% have a doctorate and 12.9% have a postdoctoral degree, with 46.5% working in postgraduate studies and 53.5% not working. Regarding the role of women in postgraduate studies in Brazil, according to official data from Capes (2017), women are still a smaller number of professors (42%). Furthermore, regarding the participants' careers, 63.5% are not leaders of research groups, and only 3.5% of participants have a productivity grant, compared to an overwhelming 96.5% who do not. According to CNPq data, 20 professors at Unipampa are productivity scholarship holders, of this total, 13 are men and 07 are women⁸, data that may be related to the fact that Unipampa is still a relatively new university.

However, according to data from Barros and Mourão (2020) on the distribution and scientific production of Brazilian professors with *stricto sensu* activities, men predominate as productivity scholarship holders, reaching a total percentage of 63%, against 37% of women scholarship holders. From the study, the authors found that, in addition to men quantitatively predominating as scholarship holders at all levels, this difference becomes more pronounced as the scholarship level increases, with only 23% of women at the highest scholarship level. (PQ 1A scholarship holder). Regarding this, Barros and Silva (2019, p. 73) argue that “the rise in the percentage of women obtaining doctorate degrees has not been sufficient to promote greater gender equality in scientific careers”, which is noticeable in the starting from the low number of women working in postgraduate studies as professors, leaders of research groups and productivity fellows.

Seeking explanations for this disparity in the number of female productivity scholarship holders, Barros and Silva (2019) highlight that one of the possibilities for such a result is the historical exclusion of women in scientific production, or even the age at which a person becomes a researcher and who obtains his/her first productivity grant, from the perspective that the younger he/she enters the scientific career, the faster he/she will reach the top of the career ladder. According to Prado and Fleith (2012), the phase from 25 to 35 years old is, on average, the period in which most scientists begin and establish their scientific career, mainly through high productivity, being conflicts with the ideal time, from the point of view of biological discourse, for women to experience motherhood. Thus, Barros and Silva (2019, p. 78) argue that:

[...] women spend more time on issues related to motherhood before investing in their careers [...]. The joint analysis of this result with the evidence that women obtain doctorates at a higher average age, as well as entering the CNPq productivity scholarship system also at a higher average

⁸ Information taken from the CNPq website (<https://painel-lattes.cnpq.br/#/pages/dashboard>).

age than their colleagues, allows us to infer the persistence of the influence of gender in the scientific world, after all, productivity scholarship holders seem to postpone not only their training but also reduce the pace of production during the reproductive period.

As discussions and investigations related to the presence and absence of women in science proliferate, we also notice an increase in investigations that seek to explain why phenomena such as the scissors and the glass ceiling effects occur in women's careers. The issue of the sexual division of labor is highlighted in these studies, in which the unequal responsibility for household chores and/or care for children, sick people, and the elderly harm women's careers (BARROS; SILVA, 2019; PRADO; FLEITH, 2012; BARROS; MOURÃO, 2020). Furthermore, science is formulated through a male model of producing knowledge, as well as sexual and moral harassment, machismo and maternity discourses, and gender representations, which delimit norms in which women need to correspond what being a good mother, wife, and scientist, overload women to the extent that it puts them in front of double or triple working hours (SCHIEBINGER, 2001).

Seeking to discuss gender discrepancies in the scientific career, researchers Prado and Fleith (2012) pointed out, based on an investigation into the distribution of research grants and literature review, some social practices that naturalize gender inequalities in science. Among these practices, the authors highlight the conflict between career and family, in which women have trouble reconciling the multiple roles assigned to them, especially the demands of their careers with family responsibilities. The authors also pointed out the representations of gender in science, which mischaracterize women in the scientific context, as well as science formulated around androcentric values, in which machismo and harassment are normalized, impacting both the performance and quality of women's work. Women, being practices that accentuate and naturalize gender inequalities in science.

According to Schiebinger (2001), access to science for a long time was limited only to men and restricted to women, as they had certain characteristics and natural values that did not match the conditions necessary for the construction of scientific knowledge. On the other hand, the statements that men had more developed rational, objective, and cognitive capabilities than women reinforced that science was a naturally masculine space. Because of these discourses, in addition to a long period of restriction, invisibility, and exclusion of women's contributions to the production of knowledge, there was also, and persists in contemporary times, the differentiation of areas that would be "naturally" feminine and masculine (SILVA; RIBEIRO, 2014).

The consequences of these assumptions can still be observed and felt in contemporary times, even after several questions and resistance movements carried out throughout history by women who sought and still seek a more egalitarian science. The political movement carried out by feminists in the so-called second wave of feminism, which sought to denounce and modify the conditions of women's inequalities, emphasizing that distinctions based on sex had a fundamentally social character (SCOTT, 1995), was crucial for women's changes in the scientific environment. These claims opened the door to feminist criticism of science, aiming to elucidate how science is not and has never been neutral in gender and race (SCHIEBINGER, 2001).

According to Soares and Silva (2019), it is possible to observe a certain polarization in the general teaching staff at Unipampa regarding the participation of men and women in certain areas. Thus, the highest participation rates of men are present in so-called masculine areas, such as Engineering, followed by Exact Sciences, Legal and Economic Sciences, while the highest participation rates of women are in so-called feminine areas, such as Human Sciences, Social and Applied Sciences, and Health Sciences. Regarding the area of activity of the research participants, the largest number of teachers are in Biological Sciences (26.7%), followed by Applied Social Sciences (17.4%), Sciences Health (15.1%), Human Sciences (14%), Exact and Earth Sciences (14%), Agricultural Sciences (11.6%) and, finally, the smallest number, Engineering (7%).

With these data, we can say that despite advances related to greater participation of women in science at undergraduate and postgraduate levels, they are still underrepresented in areas traditionally considered to be male, such as engineering and exact sciences (BENEDITO, 2019; BARROS; MOURÃO, 2020). Regarding this underrepresentation, Grossi et al. (2016, p. 18) point out that:

The exclusion of girls from scientific careers considered difficult may be associated with the social construction of gender. What men should be and know how to do socially was historically and socially constructed in a dichotomous way. Women, to the same extent, were associated with characteristics such as delicacy, zeal, and affection [...]. These are, therefore, characteristics historically considered to be opposed to those of men, marked by a sense of dispute, rationality, objectivity, and strength. Ultimately, these are characteristics that exclude and stigmatize women in the scientific scenario.

We learn the process of differentiating the capabilities, characteristics, and values of men and women from cultural socialization, through discourses and practices that impose values, beliefs, and expectations according to gender, delimiting spaces and producing living conditions for men and women (OLINTO, 2011). This reality is reflected in the scientific context, which, for a long time, restricted the participation of women, under the justification that they belonged to the private sphere of society, in the exercise of motherhood and domestic care. Awareness that these gender representations are socially constructed is one of the mechanisms for eliminating the barriers faced by women in science, which is not neutral in gender inequalities. It is important to consider and problematize that

[...] the values and characteristics socially attributed to women are devalued in the production of knowledge and that gender inequalities permeate the scientific field, for example, regarding female underrepresentation in certain areas of science, occupation of management positions, and receiving PQ scholarships from CNPq, among other aspects (SILVA; RIBEIRO, 2014, p. 464)

We also highlight the need for and importance of publicizing and making women's contributions visible in different areas of science, especially in areas of scientific careers considered difficult, such as technology, engineering, and mathematics. Programs such as “*Elas nas Exatas*”⁹, “*Meninas nas Ciências*”¹⁰ and the project “*Meninas nas Ciências Exatas, Engenharias e Computação*”¹¹ are important and differential in the deconstruction of social understandings pertinent to the non-belonging of women in science, especially in areas such as exact ones, still needing greater incentives and support initiatives, aiming to bring “girls” closer to science. Also, discussions and problematizations about women's participation in science must cover both their lack of representation in certain scientific areas, as well as the issues of career advancement, the barriers imposed by gender discrimination and the sexual division of labor, which impose, unequally, the need for women to reconcile their careers with family responsibilities (SILVA; RIBEIRO, 2014).

RELATIONSHIP BETWEEN PANDEMIC, MATERNITY AND SCIENCE FROM THE PERSPECTIVE OF TEACHERS

As we have already announced in this text, the pandemic, caused by the Sars-CoV-2 virus, which transformed society and relationships between individuals, also deepened issues relating to gender inequalities both in the scientific and social context. The work overload, culturally imposed on women, was accentuated by social isolation since confined to the domestic environment, they faced the need to reconcile, in most cases, alone, remote work with the demands of motherhood and other domestic activities (OLIVEIRA, 2020; ZANELLO, et al., 2022). This new reality enables deepened discussions and reflections on historical issues, built from society's patriarchy and sexist culture, such as the sexual division of labor and science based on masculine values, both issues that can constitute barriers to careers of women scientists, from the perspective that the entry of women into science and the job market does not free them from socially imposed obligations and responsibilities in their private work (SILVA, 2012).

According to data from IBGE (2021) available in the 2nd edition of the report Gender Statistics Social Indicators of women in Brazil (*Estatísticas de Gênero Indicadores sociais das mulheres no Brasil*), women dedicated almost twice as much work as men to unpaid work (21.4 hours per week versus 11.0

⁹ To find out more about the Program “*Elas nas exatas*”, access the website: <http://www.fundosocialelas.org/elasnasexatas/elas-nas-exatas>

¹⁰ For more information about the Program “*Meninas na Ciências*”, access the website: <https://www.ufrgs.br/meninasnaciencia/>

¹¹ To find out more about the project “*Meninas nas Ciências Exatas, Engenharias e Computação*” access the notice: http://www.fap.df.gov.br/wp-content/uploads/2020/02/Chamada_31_2018.pdf

hours), enabling to observe that black or brown women were even more involved in these tasks than white women. According to data from the same report, the greater involvement of women in unpaid work (care for people and household chores) contributes to explaining the lower participation in the labor market, with the perspective that, in 2019, the participation rate¹² of women was 54.5%, while among men this measure reached 73.7%, adding up to a difference of 19.2 percentage points.

Thus, as stated in the report, we observed that the greater involvement of women in care activities and/or domestic tasks when compared to men, “tends to impact the way they enter the job market, which is marked by the need for conciliation of double shifts between paid and unpaid work” (IBGE, 2021, p. 4). In addition to all these factors, women in the job market received, on average, 77.7% of the amount earned by men, with this inequality reaching greater proportions in functions and positions that ensure the highest earnings. From these data, we corroborate Muñoz et al. (2020, p. 38-39) when they highlight that

[...] Although significant changes and advances have occurred in recent years, in terms of inserting women into the job market and gaining space in the public sphere, women continue to assume the social role of being primarily responsible for the care of offspring, the elderly, the sick and children with special care needs. This fact puts women into an overload of work, that is, they conquered the formal job market and continued to perform the silent and invisible work that is domestic, accumulating double or triple working hours.

In the pandemic scenario, discussions related to the importance of science deepened. In this way, the eyes of the entire world followed scientific processes in search of answers for the prevention and treatment of Covid-19. This prominent scenario given to science opens space for important discussions and reflections, such as its construction around masculine values and gender inequalities. These themes have already been “denounced” and discussed in academia since the 20th century, through feminist critique of science (SILVA, 2008), but they are still relevant in the contemporary context. Talking about science and scientific androcentrism means talking about the assumptions that underpinned scientific knowledge throughout history, which, therefore, excluded and made women invisible from their context.

The delegitimization of women in science historically had its foundation in the patriarchal and sexist structure of society, which differentiated the skills, capabilities, and responsibilities of men and women according to the so-called “biological determinism” (LOURO, 2000). In this way, the social and family roles of men and women were formulated based on their sexual characteristics (BIROLI, 2018), recognizing characteristics such as “mind, reason and objectivity as 'masculine', and heart (and body), feeling and subjectivity as 'feminine'” (KELLER, 2006, p. 15). If there are differences in the supposed social and family obligations of each subject, there is also a difference in their educational treatment. Thus, historically, women were taught to dedicate themselves to managing the home and caring for their children, while men were encouraged to pursue more formal and scientific education (BIROLI, 2018).

With the more significant occupation of women in educational systems and science, the prejudices and machismo that mark their careers in the face of a society that insists on delegating a specific place for women and a science that insists on delegitimizing them from their environment. In this way, feminist criticism sought to denounce androcentric science, which produces a “rationalist science that claims to be universal and neutral – based on classist, sexist, racist, ableist discourse” (MU-NIZ et al., 2020, p. 105). Therefore, scientific requirements are often “facilitators of inequalities [...] by disregarding the context of each woman and historically constructed inequalities” (BARRETTO; MONTEIRO, 2020, p. 34).

In this context, for many women scientists, reconciling private life with a scientific career can often constitute a constant dilemma of overlapping roles in women's lives (LEMONS; MELLO; GUIMARÃES, 2014) since it persists, in society, the sexual division of labor, which imposes double or triple working hours on women. Furthermore, full-time dedication, required to fulfill the demands surrounding scientific work, often represents, in the lives of women scientists and mothers, the availability

¹² “The Participation Rate [...] aims to measure the portion of the population of working age (PWA) [...] that is, working or looking for a job and available to work” (IBGE, 2021, p. 2).

of time and attention denied being with their children. The problem is accentuated in the pandemic context, in which women face an even heavier workload, as they are the ones who, in most cases, assume responsibilities for domestic and care tasks (MUÑOZ et al., 2020).

Thus, due to the need for social isolation, the demands of remote work, for many female scientist mothers, mixed with the demands of domestic care and childcare, further doubled the working day for them, who faced the need to attend to countless activities and roles in their routine, often without a support network to help them. Around 80% of the female teachers who responded to the questionnaire stated that social isolation had impacted their professional activities in some way, for example, lack of concentration or availability of time to dedicate to the demands of remote work efficiently. As highlighted by Mestre et al. (2020), work that was previously carried out in the academic environment, with fixed days and times, began to be carried out in the time intervals between childcare or household chores, during the early hours of the morning or other favorable moments, making concentration difficult, the researchers' research and writing process.

Staniscuaski et al. (2020), in a study that sought to investigate the impact of the pandemic on academic productivity, revealed that the pandemic has been unequally affecting men and women with or without children. According to the study, women who are mothers, regardless of race, and black women, are more affected in terms of productivity and meeting deadlines during the pandemic period than men with or without children, regardless of race. We noticed that the age of children also impacts women's productivity, and the younger the children's age, the greater the impact. We emphasize that based on the question "Has the pandemic impacted your professional activities in any way?", most of the teachers participating in the research reported that the task of reconciling the demands of remote teaching with motherhood is challenging:

Madness and chaos. Poor quality work, as we must juggle everything: child, home, work, husband and myself. **(P63; 40 years old; Exact and Earth Sciences; 01 child)**

With great difficulty, as things mix and the demands, both of motherhood and being a professional, take on the character of university and permanence, of permanently always placing themselves, mixing. **(P72; 59 years old; Human Sciences; 01 child)**

With a lot of difficulty, and loneliness. **(P59, 37 years old; Applied Social Sciences, Linguistics, Literature and Arts; 02 children)**

We try to handle it. Very difficult with young children and not being able to go to school. There is no conciliation. Firstly, the children (they are very young, they depend on you for their basic needs) and what extra time I dedicate to my professional work. **(P76; 34 years old; Human Sciences; 02 children)**

According to Barretto and Monteiro (2020, p. 35), the experience of the pandemic "did not enable the demands to continue, they were just reconfigured [...]. From this perspective, it was recognized worldwide that women took on greater burdens and had greater impacts." The social situation, as it is organized, means that women, even after having conquered the formal job market, continue "to perform the silent and invisible work that is domestic work, accumulating double or triple working hours" (MUÑOZ et al., 2020, p. 39). Regarding the reports of the question "How do you reconcile the demands of remote teaching with motherhood?", some teachers emphasized the overload felt due to the need to try to reconcile the demands of motherhood and remote work, resulting from double or triple shifts of work they have been performing, needing to work extra shifts at night and on weekends, as seen in the excerpts below:

Working three shifts and even weekends. **(P23; 53 years old; Applied Social Sciences, Linguistics, Literature and Arts; 01 child)**

Using the early hours of the morning to try to complete the activities that I couldn't do during the day. **(P15; 35 years old; Health Sciences; 01 child)**

I try to teach my classes when my son sleeps. I scheduled my sleep time for after lunch for class time. It doesn't always work. I do the rest at night while he sleeps. **(P57; 45 years old; Applied Social Sciences, Linguistics, Literature and Arts; 01 child)**

Confinement to the home sphere has left many women faced with the need to reconcile domestic demands, caring for their children and remote work, generating mental overload, as “even though other members of the family nucleus spend more time at home and, occasionally, share household tasks, women are the ones most affected by the well-known feeling of 'having to take care of everything'” (MESTRE et al., 2020, p. 97). In addition to this, the demands of a scientific career have not ceased or decreased, that is, the work requirements involving teaching, research, and extension, such as teaching activities, guidance of new researchers, participation in meetings and online events, research production, continued and even increased. This impacts the physical and mental well-being of women, also interfering with the academic productivity of research mothers.

From this perspective, Barretto and Monteiro (2020, p. 33), tell us that the precariousness of remote teaching, combined with the overload of domestic work and the demands of uninterrupted motherhood in times of confinement contribute “to the intensification and prolongation of the working day of work, configuring a new working temporality with possible consequences for women’s health, especially mental health”. Therefore, in cases where, due to different factors, there is no redistribution of domestic tasks and care for other family members, the pandemic context makes women's daily reality even more exhausting.

The impact on women's mental health, as well as the feeling of needing and, at the same time, not being able to handle everything and feeling like they are failing as mothers, professionals, women, and housewives, is perceived in report from some of the research participants:

I try to reconcile, but it's complex, and difficult, often, I feel like I'm failing at both. **(P54; 38 years old; Human Sciences; 01 child)**

It doesn't reconcile. You try to handle it and, as a result, make the woman and her children sick. **(P7; 44 years old; Applied Social Sciences, Linguistics, Literature and Arts; 02 children)**

I can't. I've already cried. I'm already stressed. I've already gotten sick. **(P11; 45 years old; Applied Social Sciences, Linguistics, Literature and Arts; 02 children)**

I don't think I can. I feel more tired, not because of working remotely, but because of having to master other teaching strategies and a reduced academic schedule, which increases the work overload. **(P32; 38 years old; Human Sciences; 01 child)**

Research carried out by Borsoi and Pereira (2011), sought to discuss how certain aspects of an academic career such as excessive and exhausting working hours demand productivity and excellence, as well as high competitiveness with peers, impact the health of teachers, demonstrated that women are more likely than men to get sick. According to the authors, feelings such as mental and emotional exhaustion, in addition to fatigue and depression, are more common in women teachers because they are more involved with family and domestic demands than men, having longer working hours, both outside and inside the home environment. In another research carried out by Fabbro and Heloani (2010), on academic work and motherhood, the conciliation of teaching work, which often extends outside the university environment, with the care of people and household management, can become exhausting for women.

A survey carried out by the Federal University of Rio de Janeiro revealed that, during the pandemic, women are more likely to develop problems such as anxiety and depression (Portal R7, 2020), as a result of the overload caused by the accumulation of domestic tasks, care of children at home and the demands of a professional career (BARRETO; MONTEIRO, 2020). From this perspective, Macêdo (2020, p. 139) highlights that the work overload imposed on women, which has become even more exhausting in pandemic times, is marked by feelings such as pain, oppression, and illness, especially given the naturalization of the subordinate position that woman occupies society and the hierarchy of the traditional family structure, which leads her to exhaustion in the face of the care required by all family members. Often, women internalize, in the power relations in force in society, that it is their responsibility to carry out these tasks, spending very little time to take care of themselves, rest, or seek leisure opportunities.

According to an article online in *Jornal Estado de Minas* (2020), in a survey conducted by Catho, which interviewed around seven thousand women, around 60% of those interviewed stated that social isolation had an impact on their mental health, with consequences such as anxiety, highlighted by 79% of participants. Other feelings such as stress (49.5%), mental fatigue (48%), lack of motivation (44.5%), and sadness (45%) were also reported. According to the study data, the difficulty of reconciling the activities of remote work with domestic tasks and childcare is highlighted by 40.5% of participants as one of the main problems of social isolation. Thus, women's work overload, especially in the pandemic context, can generate emotional suffering. According to Aiello-Vaisberg, Gallo-Belluzzo and Visintin (2020, p. 6):

Under the condition of 24-hour stay at home by the nuclear family, the house becomes not only a community center, but also a unit in which both productive work takes place, in the form of a home office, and all of the reproductive activities of food, body hygiene and rest, which are usually the responsibility of the woman-mother

We emphasize that both work overload and its consequences on women's health are not problems inherent to the pandemic context; however, as we have already mentioned, with social isolation, the support network commonly available to women has become fragile, making it necessary there must be transformations and redefinitions in the family or social group of these women, aiming at the redistribution of home and child care tasks, so that they do not assume all this care alone (MUNOZ et al., 2020). Muniz et al. (2020, p. 105) highlight that the overload of work for women in social confinement “exposes the universe produced as ‘private’ in a society that individualizes domestic tasks and care production based on a sexist logic”. In the survey carried out, 46% of scientists responded that they have a support network that helps them with remote activities, 29% responded that they partially have a support network, made up of their partner, nanny, or family, and 25% said they do not have any support network for dividing domestic tasks and caring for children.

With schools and daycare centers closed and, consequently, children remaining at home, most women scientists faced the task of taking care of household chores and caring for their children alone, as the network of support commonly used by them (babysitters, friends, or family) was also limited. Having a support network for the redistribution of domestic work and childcare allows mother scientists to be able to meet the demands of remote work, continuing with their research, classes, projects, guidance, and other academic demands. Based on the question “During the period of social isolation, do you have any support network in sharing domestic tasks and caring for your children? Who?”, we can say that, for most of the research participants, their support network is the family nucleus, mainly their partner, however, we realize that, in some cases, this division of domestic tasks and care can be carried out unevenly, as shown in the excerpts below:

Partially, because my husband and I share the tasks, but this division is unequal, where I do most of the things and he “helps” with some things. We are more divided during synchronous classes. **(P55; 41 years old; Biological Sciences; 01 child)**

My son is at home in my care. When my partner works from home, he also shares the care, which helps a lot. When he is working it becomes much more difficult. **(P81; 36 years old; Human Sciences; 01 child)**

My husband and I, who are also working remotely, split up to spend time with our daughter. And I work the night shift to compensate. **(P20; 35 years old; Engineering; 01 child)**

The overload of women, which is not restricted only to the pandemic context, is the result of patriarchy and structural sexism, institutionalized and naturalized for generations in our society, which assigns different “roles” to men and women, making women mostly responsible for tasks in the field. private. This overlapping of roles and, consequently, the overload of women in double working hours, demonstrate the need for a review and redefinition of the care tasks of men and women in caring for their children. In this sense, we corroborate Muniz et al. (2020, p. 106), who highlight that it is necessary and urgent to “[...] return to the idea that a child is everyone’s responsibility: mothers, fathers,

grandparents, uncles, and aunts, from them and others. Or, at least, it should be, if people recognized that the construction of a collective, democratic, fair and egalitarian society is necessary.”

Despite the advances achieved so far, such as the more significant presence of women in science, the scientific career is still established in a way that is inhospitable to women (OLINTO, 2011; SILVA, 2008). The scientific context does not recognize and embrace women's particularities, such as the social imposition of the sexual division of labor and the experience of motherhood, which, in some way, affect the dynamics of academic work. Problematizing the experience of scientist mothers during the pandemic, “causes us to think about the reality of women-mothers in the ordinary daily lives of their regular lives, about motherhood and its invisibilities in an academic territory that does not recognize them and does not welcome them with their children” (MUNIZ et al., 2020, p. 101).

It is necessary for the scientific context to recognize the singularities of women, admitting, for example, that motherhood is a reality in the lives of many scientists and that it impacts, slows down, and can even pause, for a certain period, intellectual and publications by the teacher (DYNIEWICZ; RIBEIRO, 2020). Parent in Science, when investigating the impact of motherhood on academic careers, demonstrated that the productivity of women who are mothers drops significantly in the first few years when compared to women who do not have children. Thus, according to Dyniewicz and Ribeiro (2020, p. 5), motherhood “deepens inequality, since now the time that will be spent with the child will also affect this woman's equal relationship with others who are not, at this moment, carrying out this task”, and the academy must recognize that, in the first years of motherhood, there is an overload on women, which needs to be understood and welcomed.

This signaling about gender issues in science about the impact of motherhood on women's careers is fundamental so that changes can be thought about and implemented in academia. Among the changes that have already been taking place, we highlight some actions and policies to support maternity in Brazilian universities and research institutions, such as the Fluminense Federal University, the Serrapilheira Institute, the Federal University of Pampa and the Oswaldo Cruz Foundation, which adopted practices to support maternity, with the insertion of items in their internal notices that extend the time for analyzing women's resumes or that provide extra bonuses to their scores. Furthermore, Parent in Science launched the “Motherhood in the Lattes curriculum” campaign, which was joined by many mother scientists, with the aim of signaling and justifying that a possible drop in women's academic production may be related to their experience with motherhood.

In this way, the academic movements and public policies adopted, although important and necessary, do not extinguish the gender problem in society and science, but seek, in some way, to make science more egalitarian, so that women, who have already fought so hard, and resisted for space, can continue producing knowledge, without major restrictions and impediments. It is also important to continue criticizing not only the sexual division of labor, which places men and women unequally responsible for caring for people and household chores, but also scientific androcentrism, which does not recognize the individualities and particularities of women, especially in motherhood. It is still important to reflect and deconstruct discourses and social practices that make women inferior to men, making it difficult for them to be in the job market and certain areas of science, on an equal basis.

(IN)CONCLUSIVE REFLECTIONS

The pandemic that spread throughout the world in 2020 completely transformed the dynamics of society, changing family structures and relationships between individuals. This scenario also accentuated and highlighted social and gender inequalities in various social and institutional aspects, enabling discussion about gender inequalities present in science, as well as the issue surrounding the sexual division of labor, which burdens women with double or triple shifts of work. With social isolation, the women-science-maternity triad, which has been gaining prominence in recent years in academia, is even more demanding of attention, because of the work overload faced by scientific mothers in reconciling remote work with domestic care and the demands of motherhood, most the time, alone.

The presence of women in science is the result of struggles and resistance that have lasted throughout the entire historical context through different mechanisms, and the act of resisting and

persisting is still a constant in the lives of women scientists in the search for a more egalitarian and fair science. The model of doing science is based on the male perspective of producing knowledge, not considering the individualities and particularities of women, such as the experience of motherhood. Thus, social isolation aggravated problems that were already perceived and signaled, such as the physical and mental overload that women are prone to due to the need to meet the demands imposed by the androcentric model of producing knowledge, reconciling them with the demands of domestic work. and motherhood

Regarding the research carried out, most mother scientists responded that the pandemic impacts their professional activities in some way, reporting the work overload felt in social isolation, which, without their respective support networks, intensifies. We highlight the impact on women's mental health because of this overload, which produces, as observed in some reports, the feeling of incapacity in the face of the countless demands of activities related to both career and private life care. In this way, the experience of the pandemic did not make it impossible for the demands experienced to continue, they were simply reconfigured and, in social isolation, intensified to the extent that they overloaded the mother scientists.

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DECLARATION OF CONFLICT OF INTEREST

The authors declare that there is no conflict of interest with this article.