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VIRTUAL ENVIRONMENTS AND GENDER-BASED VIOLENCE: Special Reference to the Metaverse and ChatGPT

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ABSTRACT

Technologies such as the Metaverse and ChatGPT have incorporated gender-based violence into virtual spaces, reproducing traditional forms of patriarchal violence. Through a bibliographic review of major scientific databases, this study highlights the conducive conditions, characteristics, types of violence, specific examples, limited public policies, and the scant attention from the scientific community in addressing these issues, despite their critical importance. It also underscores the need for international cooperation to establish frameworks and protocols to at least mitigate these challenges, given the ubiquity of the internet and the delocalised nature of these companies.

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1. Introduction: Hypotheses on Gender-Based Violence in Virtual Environments Such as the Metaverse or ChatGPT

New technological applications have incorporated gender-based violence into virtual spaces such as social media, creating new criminal typologies, even with judicial recognition that a rape can occur online, despite the perpetrator and victim not being physically together. It is therefore necessary to address the analysis and reflection on emerging scenarios such as "metaverses," which will converge with the "real" and represent a challenge for strategic foresight and anticipatory governance. This development has many facets, including digital sovereignty, data protection, human resources, transaction security, preventing these spaces from becoming a refuge for cybercrime and other offences, and safeguarding personal integrity. Numerous vulnerabilities are evident in this new microcosm of social relations, where biases, discrimination, violence, and even distortions of individuals' perception of reality may develop.

The term "new technologies" and the concept of their implementation in "online," "digital," or "cyberspace" environments have been mentioned, as they occur in diverse settings such as email platforms, social media, and messaging applications (WhatsApp; Facebook—now Meta; YouTube; Twitter—now X; Instagram; LinkedIn; TikTok; Telegram, etc.), blogs (Tumblr, WordPress, Blogger, Wix, Medium, Ghost, etc.), or comment sections (on online newspaper websites or review sections of marketing or company websites such as Amazon), to name a few examples. In addition to these, which have garnered significant attention from the scientific community, the impact of the Metaverse and ChatGPT—two emerging technologies (ChatGPT, for instance, was launched in November 2022)—must be studied in relation to gender-based violence, an area with virtually no research. Thus, this study may become one of the first to proactively address such a significant issue related to fundamental rights and public policies in our democratic states.

The neologism "manosphere" (man+sphere) is even known as a reference to various online groups promoting forms of masculinity hostile to feminism, negatively impacting younger generations (García-Mingo et al., 2022; Rubio-Martín & Gordo-López, 2021). The rise of feminism and its presence in media and political agendas have positioned hegemonic masculinity in a crisis of legitimacy and partial breakdown, leading to a current period of patriarchal backlash in the form of antifeminist retreat (Sosa-Valcarcel et al., 2024). It has even been noted that there is a tendency to place responsibility for acts of violence "on those who dare to challenge norms and, in doing so, would be provoking and exposing themselves to certain types of reactions" (Del Prete & Redón-Pantoja, 2022). Its diverse casuistry and typology have been encompassed under various terms to describe and characterize it, such as "cyber-violence," which, when specifically targeting women, is also known as "digital gender-based violence." These offences are perpetrated in various ways, including non-consensual dissemination of intimate or manipulated material, cyber-stalking, cyber-harassment, cyber-flashing, incitement to violence or hatred via digital means, online sexual harassment, cyber-bullying, and other terms such as grooming, sexting, and cracking, with women being the primary victims (Ricoy-Casas & Fernández-González, 2024a).

Numerous examples have demonstrated this across professional and leisure domains, such as sports (Kavanagh et al., 2019; Litchfield et al., 2018; MacPherson & Kerr, 2021). Female athletes have been exposed to violent interactions in several ways: 1) threats of physical violence; 2) sexualization focusing on female physical appearance; 3) sexualization expressing desire and/or proposing physical or sexual contact; and 4) explicit and threateningly violent sexualization (of a sexual or misogynistic nature). Likewise, most authors call for further research in this area (virtual spaces and sports from a gender perspective). Consequently, some authors have attempted to construct counter-narratives to discourses that blame victims of such violence (Naezer & Van Oosterhout, 2021). The everyday nature, severity, and lack of research justify the need for prevention and protection against these online violences, and studies like the present one, which can shed light on the mechanisms that facilitate, propagate, and make them recurrent, with the aim of ensuring they are sanctioned and prevented.

Previous studies have already highlighted certain inequities in the Metaverse, for example, in relation to political communication, business, and the workplace. Thus, numerous aspects remain unregulated, such as image rights, taxes, licenses, and citizens will be even more exposed, as platforms will analyse where we go, what we see, and how we spend (metaverses are forms of commodifying metadata and their analysis through artificial intelligence and algorithms) with millimetric precision thanks to

augmented and virtual reality devices. The sense of presence in the Metaverse may distort many individuals' perception of reality. Cyberspace offers possibilities for escaping reality through the adoption of avatar-based identities in metaverses or social media and, at the same time, allows users almost total autonomy to criticize, subvert, or break unjust social and professional conduct protocols sanctioned in the analogue sphere (Ricoy-Casas, 2023; Gatica, 2018). Likewise, previous studies have shown that as ChatGPT does not have access to all information, it may partially fabricate responses (producing incorrect answers); its functioning is not transparent; ideological and racial biases have been identified; it has been used for political manipulation and could increase polarization (Ricoy-Casas, 2024; Ricoy-Casas et al., 2025). "Anyway, your opinion doesn't matter": this was the response given by a generative AI chatbot when the robustness of its safety mechanisms, intended to prevent technology-facilitated gender-based violence, was evaluated in one of the experiments conducted to anticipate the impact of generative AI on the safety of women and girls in these new environments (Chowdhrury, 2024).

2. Objectives and Methodology

In light of the above, it is necessary to be aware of the strengths and weaknesses of virtual spaces in relation to gender-based violence, given the negative consequences they could have for our societies. This study conducts a thorough bibliographic and documentary review using the PRISMA methodology and analysing data obtained from Web of Science and Google Scholar. It examines examples of inequities in the digital space and reflects on their challenges and opportunities, main regulatory and ethical issues, their interest within the scientific community, and their contribution to better governance. Ultimately, this work aims to offer recommendations for these environments to improve the quality of our democracies.

2.1. Objectives

The following research questions are formulated, which constitute the main objectives of this study:

• RQ1. Virtual spaces and gender-based violence: A literature review of the past three years (most recent) is conducted on gender-based violence in online environments, describing specific examples, verifying whether its incidence is higher or not, and analysing its typology compared to the offline context.

• RQ2. Metaverse, ChatGPT, and gender-based violence: A literature review without a temporal limit (given the developmental stage of these technologies—primarily in the last three years) is carried out, along with an analysis of various aspects, such as: What are the main challenges associated with the use of these technologies (Metaverse or metaverses and ChatGPT) in relation to gender-based violence? How can states effectively address these issues in light of the unstoppable implementation of these systems?

2.2. Methodology

To conduct the systematic literature review, the PRISMA methodological guidelines were followed, encompassing its three fundamental phases: planning, execution, and presentation of results. This approach enabled the identification of previously studied contexts and the determination of findings, limitations, implications, gaps, and future research areas to address the proposed research questions (RQ1 and RQ2) (Page et al., 2021; PRISMA, 202). During the planning stage of the review, a comprehensive search strategy was designed, incorporating key terms relevant to the study. Initially, the AND operator was used to include: "virtual spaces and gender violence" with a temporal limitation from January 1, 2022, to January 1, 2025 (thus, findings are focused on a three-year period). Subsequently, for the other two searches— "metaverse and gender violence" and "ChatGPT and gender violence"—no temporal limit was applied, although findings have also been concentrated in the last three years due to the recent development of these technologies. In this systematic literature review, articles from journals indexed in Web of Science were selected. After obtaining the results (48 publications), duplicates, studies unrelated to the scope of the research, and/or those not pertinent to

the research questions (18) were excluded. The results were then supplemented with other research and official publications from public and private organizations that fall outside these delimitations or formats. Additionally, in a later phase, as a complement to the analysis and reflections, studies identified through manual searches in Google Scholar were included, clearly distinguished in the study.

3. Results

A total of 48 results from Web of Science (WOS) were analysed, of which 23 were deemed most relevant, alongside more than 30 results from Google Scholar. There is evidence of greater study of gender-based violence in virtual environments, but very limited attention (only 4 cases in WOS) to gender-based violence in relation to the Metaverse and ChatGPT. Although various aspects related to the object of study of this work, such as biases, discrimination, and other inequities, have been identified, the analysis has focused solely on gender-based violence concerning women.

3.1. Virtual Spaces and Gender-Based Violence

Numerous studies concur that gender-based violence in digital environments is a reproduction of traditional patriarchal violence transposed to a new networked setting, where control is exercised more effectively and is further obscured by an oasis of anonymity and depersonalization, conferring an even greater degree of normalization (Afrouz & Vassos, 2024; Alonso-Ruido, 2024; Ramiro & López, 2023; Sánchez-Ramos, 2022; Toccalino et al., 2025). Online misogyny and its tactics aim to delegitimize the growing role of women in social life and their institutional visibility (Lacalle et al., 2023), even resorting to manipulated videos or deepfakes (González & Cruzcano, 2024). Online sexual violence disproportionately affects girls and non-binary individuals (Alonso-Ruido et al., 2024; Bailey, 2023). Various violent behaviours against women are observed in online spaces, including: surveillance and control; malicious dissemination of content to damage a woman's reputation, silence, or censor her (these attacks may even be coordinated and carried out by multiple individuals); repeated non-consensual interactions in the form of harassment (e.g., persistent and unsolicited sending of messages, images, or videos with sexual content); identity theft (to post non-consensual or false information, even on the victim's own platforms); and contacting women to establish relationships of abuse or sexual exploitation, among others.

Thus, online spaces foster hostility and violence (which can be replicated and/or amplified), reflecting physical environments (both spheres are interconnected, as technology is not neutral and is embedded in the social order). Gender-based violence has also been incorporated into online environments, even creating new criminal typologies, which are generally well-received in most legal scholarship due to the frequency of these acts, the ease of their commission, and the difficulty of fitting them into traditional legal categories such as coercion or threats. These acts are often easier to perpetrate and harder to detect in these spaces, with greater challenges in their investigation and prosecution because perpetrators hide behind pseudonyms or operate anonymously (fostering a sense of impunity). The harm endured by victims is often more significant due to their lack of familiarity with the technology enabling these criminal acts, compounded by a sense of helplessness and a multiplier effect, primarily caused by the rapid dissemination of this information (often within the victim's closest circles) and the difficulty of quickly removing harmful content due to the inherent characteristics and functioning of online content.

In addition to the ease of commission noted, the harm endured by victims in online environments is often more significant due to their lack of familiarity with the technology enabling these criminal acts, compounded by a sense of helplessness and a multiplier effect, primarily caused by the rapid dissemination of this information (often within the victim's closest circles) and the difficulty of quickly removing harmful content due to the inherent characteristics and functioning of online content. This may explain why much of the legal scholarship, particularly in relation to certain crimes, supports early prevention and repression at the first signs of such behavior to prevent further harm. It is also true, as will be observed, that in many cases, these new technologies facilitate better clarification of facts and victim protection.

In countries like India, strategies are aimed at hindering normal access to politics and its exercise. Sen and Jha (2024) analyse antifeminist trends and the misogynistic perspective of the Hindutva ideology prevailing in India's current socio-political and religious landscape under Modi. Gendered

disinformation, sexualized views of women, and virtual violence are used as prominent tools to attack the autonomy of women's "immoral bodies," further undermining the credibility of their political opinions and activism (e.g., in the case of former congresswomen and ministers). On International Women's Day, Modi and his government offered Indian women a 100-rupee reduction in the price of LPG cylinders (The Times of India, 2024). The hypermasculine Hindutva ideology is deeply misogynistic, as evidenced by calls for "rape" and violence against women (BBC, 2022). The two groups of women directly targeted by Hindutva are (1) Muslim and Christian minorities and (2) liberal feminists. As Sen and Jha (2024) note, analysing specific cases reveals the current methods used by Hindutva ideologues to silence women in digital spaces (gender policies attempting to close the gender inclusion gap, such as Beti Bachao, Beti Padhao, Ujjawala Yojana, Sukanya Samridhi Yojana, or women's reservations in parliament through Nari Sa) (Das, 2024; Naaz, 2023; Pande, 2022). In India, through memes, doxing, mock auctions, deepfake pornography, and rape threats, Hindutva groups propagate online antifeminist violence against women to prevent them from claiming their space in the public sphere. Women who raise their voices in digital spaces, as well as female relatives of men who oppose Hindutva, are threatened with rape (Sen & Jha, 2024). Women are particularly vulnerable to online violence during times of greater reliance on digital spaces for access to education, social support, and health services, especially in disadvantaged countries where the digital divide is starkly evident (Qushua et al., 2023; Rivas-Rivero & Bonilla-Algovia, 2024). These challenges are compounded in such contexts, for instance, in relation to other factors such as disabilities (Murillo, 2023; Ricoy-Casas & Fernández-González, 2024b).

For Dignam and Rohlinger (2019, p. 589), antifeminism has been a global plague that has risen with the emergence of a new breed of populist leaders worldwide, such as in the United States, where in 2016, misogynistic "red pill" forums contributed to Donald Trump's victory; in Russia under Vladimir Putin (Davidenko & Utkina, 2024, p. 136); in Turkey under Recep Tayyip Erdogan (Unal, 2021, p. 68); in Brazil under Jair Bolsonaro (Della Torre, 2023: 192); in Italy under Giorgia Meloni (Indelicato & Magalhães Lopes, 2024); and in Hungary under Viktor Orban (Fodor, 2022). This phenomenon has also been observed in India under Modi (Kaul, 2021; Naaz, 2023). This has been facilitated by the increasing algorithmisation of the public sphere, a preference for appealing to emotions and affect over objective data, leading to polarization dynamics that threaten democratic coexistence and equality (Bravo-Villasante, 2024; Ricoy-Casas, 2021; Ricoy-Casas, 2022a). From 2018 to 2023, hate speech in the manosphere has evolved to become more sophisticated and pervasive across various social media platforms; this evolution has been accompanied by an increase in radicalization and verbal violence against women and feminist groups (Fernández, 2025). Paradoxically, despite the progress made by contemporary society, sexist behaviors or those clearly undermining gender equality continue to be reproduced in these virtual spaces within a markedly technological and avant-garde setting that nonetheless retains the essence of centuries-old patriarchal culture. Thus, virtual spaces perpetuate gender-based discrimination, with the added danger that violence perpetrated through these means is more likely to be normalized as part of the environment (Dewanty & Saryono, 2024; MacArthur et al., 2024; Sánchez-Arjona, 2023; Schulenberg et al., 2023).

Unfortunately, these behaviors have become normalized and, in some cases, are mistaken for jokes or downplayed in importance (Frezzotti & Tarullo, 2024). Even higher education classrooms can be spaces of both cultural contestation and epistemic violence (Egan, 2024). As a result, institutional reporting platforms have been created to address violence perpetrated by educators through unwanted touching, suggestive remarks, "accidental kisses," sexist comments, sexualized jokes, and persistent invitations. Beyond academia, elements inherent to these environments, such as "memes," have also been used as a form of documenting gender-based violence, a space for contesting sexual roles, and a relatively impactful strategy for stimulating cultural and social change (Pabón Cardona et al. ,2023). There are also spaces for cyberfeminism, including those specific to groups such as women with disabilities (Murillo, 2023). Thus, prevention and protection against online violence emerge as an urgent need (Díaz-Aguado, 2022).

As an example related to professional contexts, virtual gender-based violence has been verified and confirmed in the field of sports, compounded by gender and diversity issues (e.g., transgender individuals), particularly in activities traditionally considered masculine, such as weightlifting, skateboarding, golf, or steroid use, to the point that some authors have expressed concern for the

physical safety of individuals in these areas. This confirms aspects highlighted in previous studies, such as misogyny, and the call by most authors for further research in this area (virtual spaces and sports from a gender perspective) (Kavanagh et al., 2023; Kitching et al., 2020; Phipps, 2023; Taha-Thomure et al., 2022). Similarly, LGBTQI+ individuals have faced negative reactions and online abuse due to their choices and identities, highlighting spaces where the patriarchy feels challenged and responds with attacks (Shome, 2022). Organizations such as FIFA, the International Tennis Federation (ITF), and World Athletics have adopted Ascott (FIFA, 2022). Similarly, the global players' association (FIFPRO) has considered doing the same for the Women's World Cup to curb online abuse of athletes (FIFPRO, 2022). In this regard, the International Olympic Committee (IOC) emphasized its commitment to safeguarding in sports with a $10 million investment to strengthen prevention and response to abuse in sports, highlighting the importance of including cyber environments in its mission for safe sports (IOC, 2023).

3.2. Metaverse, ChatGPT, and Gender-Based Violence

In June 2021, Facebook CEO Mark Zuckerberg explained to his employees why the social network needed to become a "metaverse company," an interconnected environment akin to a virtual reality parallel to physical reality, reminiscent of science fiction. This medium, accessible through headsets, glasses, phones, PCs, and virtual reality gaming consoles, allows users to socialize, work, attend concerts or shops, conduct business, and play with others (or at least their avatars) within this space. The announcement to employees foreshadowed the company's name change (previously known as Facebook Inc.) to Meta Platforms on October 28, 2021, highlighting its significance and firm commitment, similar to other tech companies like Microsoft (Ricoy-Casas, 2023). ChatGPT is a chatbot, a software program based on artificial intelligence (AI) capable of engaging in highly personalized conversations with users on specific topics, going beyond pre-programmed responses by consulting data repositories to generate responses. It also strives to make interactions feel human-like, simulating or generating natural language, although further development is needed to capture nuances such as double meanings, sarcasm, or emotional states. ChatGPT was launched on November 30, 2022, developed by OpenAI, a leading AI research organization, with financial support from Microsoft (Ricoy-Casas, 2024). Currently, ChatGPT also generates videos, illustrations, and visual prototypes through AI in minutes.

Its operation through artificial intelligence (AI) and algorithms will accelerate the propagation of errors, biases, and discrimination, as well as the production of manipulated videos or deepfakes (González & Cruzcano, 2024). The manipulation of images, audio, or videos is not a new phenomenon. However, their execution through AI techniques, which involve a higher degree of sophistication and produce results that closely resemble reality, makes it significantly harder to distinguish between authentic and false content. As Montesinos Garcia (2024) notes, deepfakes gained notoriety in late 2017 when an anonymous Reddit user (known by the alias "deepfake") shared fake pornographic videos superimposing the faces of celebrities like Taylor Swift or Scarlett Johansson onto the bodies of nude women. Despite the prompt removal of these videos, this manipulation technique has spread rapidly across the internet, largely because creating such fake content is now accessible to anyone, thanks to increasingly popular free applications that facilitate relatively simple content editing, with enormous potential for malicious and criminal purposes. Among these, the production of pornography, particularly in cases of "revenge porn," stands out as its primary manifestation.

Undoubtedly, these spaces will also enable many of us to have our own avatars—digital representations of ourselves for interacting with others, studying, working, shopping, etc., particularly in the Metaverse (Ricoy-Casas, 2022b). These avatars could be used for the "objectification of women," and in particular, those with multiple marginalized identity factors (e.g., women of color and lesbians) would face compounded forms of harassment (as would other minorities and individuals with characteristics subject to discrimination) for being perceived as non-conforming to hegemonic culture. On one hand, while in other virtual environments women can easily hide their gender identity (but should they have to disguise themselves to avoid harassment?), the unique combination of avatar design, pervasive use of voice, and body language through partial or full-body tracking in social virtual reality makes women far more visible and identifiable as targets by providing more information about their gender identity to other users. Some studies have already verified incidents of bodily sexual harassment in social virtual reality, particularly in relation to video games (Schulenberg et al., 2023).

Individuals belonging to a marginalized group in the offline world are likely to face the same subordination in the Metaverse if they choose an avatar that reflects their personal characteristics. However, it is also problematic if an individual selects an avatar with physical characteristics different from their own to conform to socially accepted views on appearance and privileges. While such "conformist" avatars may be less likely to experience social subordination, they could erode personal autonomy, self-determination, and diversity in society (Rigotti & Malgieri, 2023). Thus, this evidence confirms that these new spaces can amplify the issue of gender-based violence, alongside other analyzed issues such as debates around ethics (biases and disinformation), technological dependency, loss of human creativity, or potential economic implications (Arguedas & Simon, 2023; Ferrara, 2023), which are not the focus of this study.

Likewise, hyper-realistic options could exacerbate disorders related to body image and mental health, while highly customizable options could reduce diversity and reinforce idealized stereotypes (Basu, 2021; Park & Ogle, 2021). Numerous physical and psychological risks are associated, such as body dysmorphia, selfie dysmorphia, eating disorders, and disconnection from one's own reality. Notably, some individuals have even married holograms, considered pop stars in Japan (Jiménez, 2019). For Patwardhan (2023), in relation to ChatGPT, the greatest threat of AI is the potential loss of meaning in life and the weakening of human agency caused by technology across much of humanity. All other threats, including those of current AI, are mere epiphenomena of this fundamental threat. Therefore, the first priority for technologists, policymakers, and governments is to allocate resources and attention to addressing the issue of life's meaning and mitigating the overwhelming and universal sense of powerlessness, among which health-related issues stand out.

There is still insufficient research on how these technologies will affect us physically and psychologically, although aspects of hyperconnectivity have already demonstrated impacts (Pozos, 2023). Currently, there is even research attempting to test the effectiveness of support groups in the Metaverse for Ukrainian refugee populations. The primary objective of this study was to evaluate the effectiveness of virtual Metaverse support groups in improving the overall well-being of Ukrainian refugees, understanding how virtual spaces affect the perceived social support for these refugees, and whether such platforms can raise awareness about gender-based violence (Giosan et al., 2024). Virtual spaces limited to groups with shared values in a narrow area lead to the expansion of avoidance and hatred toward other groups or communities. For Kang (2024), there are two solutions to this propagation of hatred: 1) the existing direction of feminism must shift to represent the voices of discriminated and/or socially disadvantaged members; 2) the Metaverse should aim to expand empathy for others and would benefit from active use in schools and public institutions. The very effort to "improve or create better representations" of certain groups and more inclusive narratives in newer generations of software (Breazu & Katsos; 2024) highlights the problem anew: these systems allow shaping according to pre-established patterns, which can always be subject to undesirable logics or interests. However, technology is not inherently harmful, as some examples demonstrate (Ferreras et al., 2024). What is necessary is to find applications that promote greater inclusivity without enabling manipulation.

4. Conclusions

We have observed how the adoption of new political measures in various countries, coupled with the rise of new populisms, legitimizes the subjugation and domination of minorities, indigenous communities, environmental concerns, and human rights issues. There are serious attempts to domesticate women on online platforms, often through disciplinary measures such as emphasizing their biological status, reinforcing gender binarity, and threatening their bodily autonomy. This may be explained by the expansion of antifeminism in recent years (Chemaly, 2019; Dignam & Rohlinger, 2019). As Venditto and Amaambo (2022) point out, the portrayal of women, particularly female public figures, on social media confirms that without policies and norms to educate and guide democratic public discourse, it will be difficult, if not impossible, for women to assert their voices and exercise their rights as citizens and active participants. The focus on violence against women, especially younger women (who are the primary users of spaces like the Metaverse or ChatGPT), stems from the need to provide knowledge about this situation to serve as prevention in an environment that is increasingly commonplace and pervasive across all aspects of their lives (family, social, and professional). We have

highlighted conducive conditions, characteristics, and types of violence, as well as specific examples of situations. Additionally, we have noted the limited public policies and the scant attention from the scientific community in addressing these issues, where action should already be underway, providing frameworks and protocols to at least mitigate them, although the ubiquity of the internet and the delocalized nature of the most prominent companies in the sector complicate even the prosecution of such offenses.

It is crucial to promote technological training that includes all sectors of society, especially women (addressing the gender-based digital divide, compounded by various forms of discrimination based on age, race, etc., which have not been analysed in this study). Social inequalities would be reinforced and accelerated, as certain groups, particularly from the Global South, rural areas, and women, will have limited opportunities to become "meta-users" due to the cost of the hardware and software required to access these spaces, or even due to a lack of internet access or broadband (Jain & Banerjee, 2024; Rigotti & Malgieri, 2023). To foster a more inclusive and equitable social virtual reality landscape, it is essential to address these disparities and promote a deeper understanding of the complex interplay between technology, identity, and power dynamics.

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