International standards for the protection of women against gender-based violence applied to predictive artificial intelligence

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Abstract

This article describes the international standards for the protection of human rights related to gender-based violence against women, applied to predictive systems deriving from tools using artificial intelligence, specifically, VioGén from Spain. To this end, a qualitative methodology with a descriptive scope is applied, using synthetic and exploratory methods of information from legal theory sources and official reports on the use of these tools. This is also verified by means of computer science methods explaining the architecture of the algorithms. Then, the study compares the international guarantees of the States that protect the human rights of women who are victims of gender-based violence. As a result, VioGén encompasses the roles of prevention, protection, research, coordination, surveillance, and data collection. However, the study identifies challenges in the approach to some types of gender-based violence against women and the application of this tool in the obligations of prosecution and punishment.

Keywords: Human Rights, Artificial Intelligence, International Obligations, Gender-based Violence.

I.   Introduction

Gender-based violence (GBV) is a reflection of inequality and of the persistent presence of patriarchy (Howie, 2021), and can be expressed through sexual, physical, psychological, economic, domestic, symbolic, and institutional violence (Londoño, 2020). Thus, it is evident that, first, there is a structural problem in society that causes the violation of the rights and legal assets protected by several international law instruments. Second, there is a need to advocate for the reduction and eradication of GBV against women with all available means.

To achieve this task, UN Women (2020) indicates that it legal, medical, psychological, and all other services required should be implemented to achieve the reparation and protection of women who may be victims and/or survivors of GBV. Some of the measures adopted for this purpose are the development of artificial intelligence (AI)-based tools such as VioGén (Comprehensive Monitoring System for Gender-Based Violence Cases), ODARA (Ontario Domestic Assault Risk Assessment), and SARA (Spousal Assault Risk Assessment). These tools identify the risk level of GBV or femicide, based on which they implement protection plans to counteract violence against women.

In the last decade, the use of AI-based tools has enabled the fulfillment of States' international obligations in different matters. Examples of such cases are "Prometea," developed to rapidly structure a court's ruling via voice command, or the digitalization of medical records to ensure the provision of an efficient health service (Corvalán, 2018). Additionally, the UN (2022) states, especially in terms of gender, that it is necessary to consider different types of violence against women, including those occurring in digital contexts, to take preventive measures along with "cooperation with the technology sector" (para. 66).

In this regard, this study aims to analyze the obligations of States under international law for the protection of women, including the Convention on the Elimination of All Forms of Discrimination against Women, the general comments of the Committee on the Elimination of Discrimination against Women (CEDAW), and the Declaration on the Elimination of Violence against Women, and determine how these obligations are applied in the VioGén system in Spain and the extent of their implementation.

To achieve this goal, the study develops a synthetic and exploratory method of information and legal theory sources to identify the AI tools used for determining the risk level of GBV. Then, the study employs the analytical method to understand the composition of VioGén based on its architecture from open consultation sources to recognize its variables and uses for different institutional bodies in Spain. The ultimate goal of this analysis is to assess compliance with international obligations in the use of tools leveraging AI.

Along these lines, the international obligations deriving from instruments for the protection of 'women's human rights relating to cases of GBV are grouped into the following: prevention, protection, prosecution and punishment, reparations, coordination, surveillance, and data collection. The guidelines and specific measures to comply with these obligations are within the margin of appreciation of States, which are supported by AI tools along with semi-automatic systems, contributing toward making informed decisions in the prevention of GBV and the protection of women's human rights.

The results and discussion are presented in three sections: The first describes GBV, its origin, classification, and exacerbation factors. Second, prediction algorithms for GBV will be covered, along with the context of AI and an analysis of the tools developed to predict GBV risk. Third, the obligations of States in the international legal framework for the protection of women specific to the case of VioGén will be presented to make some recommendations and proposals for improvement based on the weaknesses and challenges of its implementation in the field of prevention of GBV.

II.   Gender-based Violence

First, it is necessary to approach GBV starting from the perspective that it is a phenomenon constituting a public health issue and a violation of women's human rights (World Health Organization, 2021). This perspective has been employed by various sources that have reflected it as a social problem. The UN's definition of GBV is as follows:

> [...] any harmful acts directed against a person or a group of persons because of that person's gender [...] While women and girls are disproportionately targeted for gender-based violence, men and boys can also be targeted. This term is sometimes used to describe violence against LGBTQI+ populations, referring to violence related to norms of masculinity/femininity or gender norms. (UN Women, n.d., para. 2)

In accordance with previous statements regarding GBV, Howie (2021) explains that this phenomenon is an indicator of inequality, asymmetry of power within couples, the subjugation of women's will, the permanent presence of patriarchy, machismo, and the "under-appreciation of women as holders of fundamental rights" (p. 108).

Meanwhile, Ferrer and Bosch (2000) explain that GBV comprises a series of aggressions and violent behaviors toward women perpetrated by men, which are a sign of misogynist attitudes and beliefs. This observation is complemented by Zurita (2013), who establishes that GBV "requires that the aggressor be male, that the victim be a woman, and the existence of an affective relationship between them as a couple or ex-partners, even if they do not live together" (p. 63).

From a normative point of view, the Declaration on the Elimination of Violence against Women defines violence against women as,

> [...] any act of violence based on belonging to the female sex that results in, or is likely to result in, physical, sexual, or psychological harm or suffering to women, including threats of such acts, coercion, or arbitrary deprivation of liberty, whether occurring in public or in private life (UN, 1993, para. 14)

However, this type of violence has different causes. Castro and Riquer (2003) state that there is a paradox in this regard, as they affirm the following:

> When empirically studying partner violence and domestic violence, patriarchy has been reduced to individual variables, that is, to the sociodemographic characteristics (age, marital status, educational level, occupation, and income) and behavioral aspects (mainly alcohol and drug use) of the male person. This paradox constitutes a methodological fallacy, which consists precisely in reducing a structural phenomenon (patriarchy) to individual indicators (Castro & Riquer, 2003, p. 137)

The aforementioned methodological fallacy is also noted by Canedo and Sánchez (2019), who use the results of a citizen perception survey conducted in 2015 in Bolivia called Cochabamba nos une (Cochabamba unites us). When evaluating the most voted causes of violence against women, alcohol consumption was in the first place, followed by a culture of machismo, lack of values, and lack of education, indicating that there is no true understanding of the causes of GBV and consequently, no structural solutions to reduce or eradicate it.

In addition, Sánchez (2020) considers that GBV "appears to be an intimately private act; however, it is a microcosm of the culture to which one belongs and, at the same time, it is a method of sexual politics through which asymmetrical relationships are established" (p. 241). This shows that it is necessary to evaluate the environment and social structures in place to determine the true causes of GBV and thus design possible strategies and efficient and effective solutions to mitigate it.

This type of violence is expressed in different ways, UN Women (n.d.) states that there are seven types of violence against women:

The first type is violence against women and girls in the private sphere, which includes domestic abuse or partner violence and may include economic, psychological, emotional, physical, and sexual violence.

The second type is femicide, the murder of a woman because of the fact that she is a woman, generally committed by partners or ex-partners of the victim and understood as the conclusion of previous situations that placed the woman in an inferior position with respect to her partner and that were exercised against her (MESECVI, 2008).

The third type is sexual violence, defined as any act of a sexual nature carried out against the will of another person, including sexual harassment (non-consensual physical contact or other types of non-physical violence) and rape (non-consensual vaginal, anal, or oral penetration).

The fourth type is human trafficking, which includes the acquisition, possession, and exploitation of persons through the use of force, coercion, or deception.

The fifth and sixth types of violence comprise female genital mutilation, a practice that consists of the total or partial ablation of the external female genitalia generally performed by traditional circumcizers (WHO, 2020), and child marriage, in which one or both spouses are under 18 years of age (WHO, 2020).

Finally, UN Women highlights a seventh type of violence that has recently been identified. This violence is related to technological tools and is referred to as "online or digital violence"; it is understood as any act of violence committed through the use of information and communication technologies, including cyberstalking (intimidating or threatening messages), sexting (sending explicit messages or content without authorization), and doxing (publication of information about the victim).

It should be noted that after the rise of information and communications technologies (ICTs), tools are being used negatively because they exacerbate violence against women, as seen in the foregoing types of violence. However, they can also be developed to prevent violence through the use of AI algorithms to predict violence and take the necessary institutional measures to counteract it.

Thus, the following automatic and semi-automatic tools have been developed: Serious Partner Violence Risk Prediction Scale (EPV in Spanish), Danger Assessment (DA), ODARA, Brief Spousal Assault Form for the Evaluation of Risk (B-SA-FER), Threat Assessment Systems (DV-MOSAIC), SARA, and VioGén. Some of these tools are discussed in detail in the following section of this article.

III. Gender-based Violence Prediction Algorithms

AI tools that allow predicting the risk faced by women is one of the strategies implemented by some States to take efficient measures to counteract a possible violation of women's rights in the context of GBV.

According to Rouhiainen (2018), AI "is the ability of machines to use algorithms, learn from data, and use what they learn in decision-making just as a human being would do" (p. 17). He considers that this allows devices configured with this capability to analyze large amounts of data and provide valuable and effective information for decision-making, as it develops certain steps to achieve this purpose. Thus, AI facilitates organizations or persons needing to review or consider large amounts of information and multiple variables (Corvalán, 2018).

To complement this interpretation, Miró (2018) estimates that AI not only processes information but also processes organized mathematical data as a starting point, allowing AI tools to build a cognitive process based on algorithms similar to that of human beings, which allows them to become intelligent.

To build an AI that contributes to its own operations, it must be trained using one or several different types of machine learning, including machine learning and deep learning. Rouhiainen (2018) states that machine learning seeks for devices to have "the ability to learn without being programmed to do so" (p. 19), which is achieved through the use of algorithms that allow them to learn from data patterns. Meanwhile, deep learning is used to solve complex problems and is created based on neural networks organized such that they can analyze and process information correctly (p. 19).

The forms of automatic learning are subdivided into supervised (based on tasks requiring human intervention for adequate feedback), unsupervised (based on data, and not requiring human intervention), and reinforcement learning (learns to react to their environment, with positive reinforcements given for each success) (Sancho-Caparrini, 2020).

As mentioned previously, several developments have been made in the field of preventing GBV through AI. Some of the developed tools seek prediction such that institutions can take the relevant measures to counteract GBV by protecting women. As mentioned, some of these include the EPV, SARA, and VioGén.

First, the EPV was created from the need to validate a scale of this type in Spain as the existing ones were Canadian and American; therefore, it is used by the Spanish authorities (Echeburúa, Amor, Loinaz, & De Corral, 2010). It feeds from five assessment elements (considering culture), classified as personal data, the couple's relationship status, violence type, the aggressor's profile, and the vulnerability of the victim (Ortuño, 2021).

Thus, it systematizes the information for predicting the risk of serious violence, which, according to the generalities of the tool, includes homicides, attempted homicides, use of weapons or dangerous objects, or injuries (Echeburúa et al., 2010), and then classifies the processed data into three levels of risk on a scale of 20 scored items: Low (0-5), moderate (5-9) and high (10-20) (Ortuño, 2021).

This was considered a good tool to plan for protective measures for victims; one of its advantages is that it accurately assesses the risk of partner violence. However, in studies conducted to review this instrument (EPV-R), the scale was invalid when less than 12 of the 20 items that comprise it are answered because more than 50% of the information to determine risk is unavailable. Therefore, the use of prorating tables is suggested, as they enable an average of the score to be assigned (Echeburúa et al., 2010).

Meanwhile, SARA is a guide that deals with the "[…] assessment of the risk of partner violence. Originally developed by P. Kropp, Stephen Hart, Christopher D. Webster, and Derek Eaves […], it is designed to assess the risk of serious violence (essentially physical and sexual violence) between members of a romantic couple's relationship" (Pueyo, López & Álvarez, 2008, p. 116).

For this purpose, it analyzes 20 risk factors classified into five groups . The first is criminal history, including previous violence against family members, previous violence against strangers or non-family acquaintances, and violation of probation or other similar measures (Pueyo, López & Álvarez, 2008, p. 116).

The second group is psychosocial adjustment, consisting of problems in recent relationships, employment and work, drug use/abuse, personality disorder with anger, impulsivity, and behavioral instability. The third group is a history of partner violence, including past physical violence, past sexual violence and/or jealousy attacks, use of weapons and/or credible death threats, past violations, and breaches of restraining orders.

The last group is current crime/assault (that is motivating the assessment), similar to the previous set but referring to more recent behaviors, and other considerations determined by the specific case (Pueyo et al., 2008).

Finally, after evaluating the items, SARA provides a level of low, moderate, high, or imminent risk of violence, estimating the likelihood of violent behavior, and then hands over these data to external agents, such as police, protection and security divisions, judicial or penitentiary procedures, and victim care (Pueyo et al., 2008).

The progress of these two tools has been the background of VioGén, which, in the words of the UN, "has been consolidated as an effective application for the prevention of gender violence (2015)." This is evidenced by the high level of satisfaction of women using the system (González & Garrido, 2015), which has set an example for other States to use it.

VioGén uses forms similar to those of EPV and SARA, analyzing the short-term risk of recidivism of perpetrators of GBV and making it possible to monitor the vulnerability of women over time in order to guarantee their protection through the creation of specific measures.

Thus, since July 26, 2007, Spain has been using the semi-automatic learning AI tool VioGén or "VDG System" (González, 2018), developed by the Secretary of State for Security of the Spanish Ministry of the Interior (Zurita, 2013) based on the provisions of Organic Law 1/2004, which seeks to counteract GBV. The purpose of this system is to conduct police risk assessments to "monitor and establish protection measures for victims […], designing, if necessary, a security plan with personalized self-protection measures" (Zurita, 2013). (Estévez, 2020, p. 131).

Thus, this tool is based on continuous risk analysis and homicide statistics to prepare a predictive scale of risk between extreme, high, medium, and low levels. In addition, for its operation, it includes tools from different State sectors such as the intranet of the Spanish Public Administration (SARA Network, Application Systems and Networks for Administrations), the Integrated System of Operational Management, Analysis and Citizen Security (SIGO in Spanish) of the Civil Guard, the SIDENPOL data file of the National Police, the Administrative Records System to support the Administration of Justice (SIRAJ in Spanish), the Penitentiary Information Management System (SIP in Spanish) and the Penitentiary Social Information System (SISPE in Spanish) (Estévez, 2020).

In the same vein, VioGén classifies information received from complaints filed with the police, resolutions issued by judicial bodies, and the files of different institutions providing care to victims. Some of the data it contains are ID cards, addresses, telephones, emails, and demographic characteristics such as family members, date and place of birth, employment status, education level, and marital status (González, 2018). Thus, it has access to a large amount of data that enables it to achieve its purpose.

This system uses two types of forms: Police Risk Assessment (VPR) and Police Risk Evolution Assessment (VPER). The former comprises 39 risk indicators that are evaluated by a police officer at the time of the complaint allowing them to establish the risk of recidivism in the short term in the following levels: not detected, low, medium, high, or extreme. (González, 2018).

These risk indicators in the VPR form according to González, López & Muñoz (2018) are classified into four subject-matter dimensions: 1. Severity of the event reported, which considers information on the history of partner violence; 2. Factors related to the aggressor, divided into partner relationship, indicators of antisocial characteristics, and psychopathological and psychosocial adjustment indicators; 3. Situation indicators that may accelerate violent actions, which considers the characteristics of the victim that put her in a vulnerable position; and 4. Subjective aspects of the victim about her own risk.

The VPER form is used to follow-up on the complaint and the order of precautionary measures by the judge. It operates through 43 indicators, 34 for risk and 9 for protection. These indicators are grouped into five criminological dimensions comprising the four VPR indicators in addition to the victim's risk level perception to contribute to their self-protection (González et. al, 2018). The above allows an ongoing study of the victim's situation to be carried out for due action by the different institutions responsible for the safety and protection of women and, if necessary, to inactivate the case in the VioGén (González et al., 2018).

Figure 1. The VioGén Process

Source: Prepared by the authors

Finally, the VioGén system, as shown in Figure 1, through the use of the two police risk assessment forms, continuously monitors reports to protect women's rights and prevent new behaviors in the GBV context. It represents an innovation in the development of AI tools for preventing GBV because it is the only one to use two forms instead of one (Estévez, 2020).

IV.   International Legal Framework For The Protection Of Women Applied To Viogén

In the context of women's protection, States have different international obligations outlined in various instruments such as the Convention on the Elimination of All Forms of Discrimination against Women and the Declaration on the Elimination of Violence against Women, which were created out of the need to provide

International standards for the protection of women against gender-based violence applied to predictive artificial intelligence

49

greater protection to women given the systematic and widespread violation of their rights. Therefore, these instruments encompass the duties of prevention, protection, prosecution and punishment, reparation, co-ordination, monitoring, and data collection.

Specifically, the 1979 Convention on the Elimination of All Forms of Discrimination against Women established the general guidelines for States Parties to create conditions of equality in the different areas in which women develop (UN, 1979). For this purpose, CEDAW was created, which created the exhaustive General Comment No. 35 of 2017 "on gender-based violence against women, updating General Recommendation No. 19." This, in turn, extended General Recommendation No. 12 of the eighth session in 1989. These documents should be interpreted in light of the 1993 Declaration on the Elimination of Violence against Women.

Therefore, each of these international commitments are detailed below:

Prevention duty: This duty contemplates the need for adopting measures to address underlying causes such as patriarchal attitudes and gender stereotypes, the promotion of women's empowerment, the implementation of programs to raise awareness of the denial of GBV, and the regular training of public officials on differential treatment of these situations (UN, 2022; CEDAW, 2017).

This international commitment, specifically in VioGén, is evidenced in Figure 2, as it shows the number of reports filed with the Spanish authorities and the number of active cases in the system, showing the growing attention given to them as well as the number of protection measures determined by VioGén and in general terms by the Spanish State to prevent GBV and protect potential victims.

Figure 2. VioGén Figures
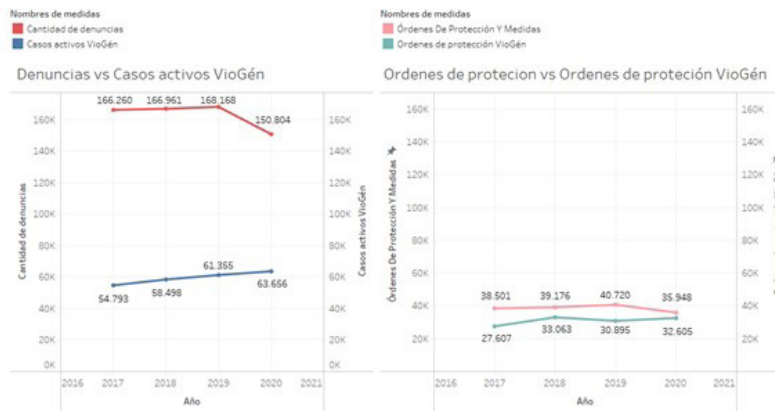
Source: Prepared by the authors

Protection duty: This duty focuses on the protection of women reporters and witnesses of GBV through the provision of adequate and accessible protection mechanisms after immediately assessing their risk, protecting their privacy and safety, reducing burdens on women victims, and ensuring legal assistance for women survivors (CEDAW, 2017).

Prosecution and punishment duty: This duty concerns the guarantee of effective access of victims to courts, the application of criminal law by authorities to impose appropriate sanctions, and the avoidance of applying alternative dispute settlement procedures in these cases (CEDAW, 2017).

Reparation duty: This duty covers measures such as financial compensation, comprehensive provision of services for the recovery of the victim, and the guarantee of non-repetition, considering factors such as the severity of the harm suffered and the promptness of its adequacy . Additionally, it welcomes the need to design transformative reparation programs that consider specific aspects that may have caused the violation of rights (UN, 2022; CEDAW, 2017).

Coordination, monitoring and data collection duty: To fulfill this duty to be fulfilled, the following measures are suggested: evaluation of laws, policies, and programs in cooperation with civil society organizations; cooperation between the different elements of the justice system and organizations working to

support victims; and the establishment of a system allowing for the collection and analysis of statistical data on GBV, the number of protection orders issued, rates of reports dismissal, convictions, compensation, and reparation (CEDAW, 2017).

In addition, as part of this duty, the Committee urges States to allocate resources to the prevention of GBV, the protection of victims, the investigation and prosecution of perpetrators, and reparations to victims.

Moreover, in its General Recommendation No. 19 of the eleventh session in 1992, the Committee urges States Parties to adopt effective measures to prevent public or private acts of GBV and identify attitudes, customs, and practices perpetuating violence against women (CEDAW, 1992).

Along the same lines, CEDAW highlights that States have a general and immediate obligation to pursue "a policy aimed at eliminating discrimination against women, especially GBV against women" (2017, para. 21) and highlights the need to ensure that laws, policies, programs, and procedures do not perpetuate discrimination against women.

The 1993 Declaration on the Elimination of Violence against Women also urges States to take effective measures to eliminate violence against women through actions such as preventing, investigating, and punishing acts of GBV, providing support to ensure fair redressal for women victims of violence, and statistically monitoring the situation (UN, 1993).

The above measures provide evidence of the States' international commitments to prevent GBV in the jurisdictional systems and other systems addressing this matter, such that an adequate investigation is conducted and an appropriate correct sanction is applied to harmful conduct against women. This is to achieve, first, comprehensive care for the victims, and second, a reduction of these cases through the prevention nature of the law.

Likewise, it is essential that the States, given their international obligations, create tools, protocols, programs, plans, strategies, and public policies to prevent, investigate, punish, and eradicate violence against women, integrating the organs of public power to create a support network enabling State action toward the fulfillment of its international duties (CEDAW, 2017).

The application of these international obligations is evidenced in the case of Spain with the use of VioGén. First, it prevents GBV through the creation of protocols for police assessment of the risk level of violence against women within the framework of Organic Law 1/2004. After analyzing recidivism in cases of violence, it allows for the identification of all variables to design efficient and effective strategies to counteract this problem (González et al., 2018).

Second, the States' obligation to investigate is applied in VioGén, indicated by the adoption of Instruction No. 2 of the Secretary of State for Security of the Ministry of the Interior of Spain in 1998. This instrument enables victims to file an official report with State security forces in cases where the facts occurred in a different jurisdiction from that of the security force where the report is made, or when the report is received by personnel trained with a differential approach. This has continued to be followed with the implementation of the AI-based tool (González et al., 2018).

Third, regarding the punishment obligation, the State, as the guarantor of inhabitants' rights, especially regarding criminal action, shall be responsible for creating necessary processes for the restoration and reparation of GBV victims and survivors. Through the VioGén system, this can be seen in the procedure that allows taking protection measures and in ensuring access to information that can be used for prosecution and punishment. Thus, the Public Prosecutor's Office, forensic psychologists, and the penitentiary are some users with access to the tool (González, 2018).

So far, we have compared and contrasted States' international obligations in preventing GBV with the VioGén system in terms of the protection of women's rights, specifically those of prevention, protection, investigation, and finally, punishment.

Some of the scenarios proposed to optimize the development of the tool and adapt international standards for the protection of GBV to VioGén are as follows: Including all forms of violence against women because it focuses on physical violence and "acts of violence committed by caregivers; police violence; violence in public spaces, the workplace and schools; and the harassment of women human rights defenders" (UN, 2015, p. 15). Further, it should make more efforts in terms of prevention by strengthening education in

International standards for the protection of women against gender-based violence applied to predictive artificial intelligence

51

schools to eliminate stereotypes reinforcing GBV, as well as the violence derived from ICT.

Estévez (2020) provides other suggestions regarding the performance of VioGén, highlighting that some sectors are not part of the system, hindering the purpose of uniformity of the State. Furthermore, citing Dressel and Farid (2018), he considers that using simpler forms may increase efficiency in establishing the risk level of the victim. In a comparative analysis with assessments from the British tool "DASH," the study could identify that some indicators to determine recidivism were irrelevant. Finally, Zurita (2014) concludes that the 95% acceptance by police officers of the risk level determined by VioGén can trigger automation in sensitive areas, such as the risk women face in their daily environment.

Thus, Miró (2018) considers that the automation of AI tools can complicate the explanation of why a calculation has been reached. This is due to the difficulty involved in determining the variables considered to reach the result, which has been called the "black box." Further, other concerns are mentioned regarding the use of these systems, such as privacy, considering the large amount of data processed by the algorithm, and issues related to fundamental rights and procedural guarantees.

Regarding the future of VioGén, González et al. (2018) set out some proposals to further develop it, as well as the Police Risk Assessment Protocol, among which the following are noteworthy: restricting the access to the VioGén system for members of State security forces linked to cases of GBV in police databases that may contain data on victims; including children in police risk assessments of victims; and the participation of victims in the creation and implementation of a personalized protection plan.

Finally, although the progress of AI-developed tools for the prediction of GBV against women is celebrated, the limitation of the human rights of the aggressors should be considered. Regarding the indicator scores measured by the form in other tools, classification criteria are used that "[...] would imply a possible violation of human rights such as the rights to equality, non-discrimination, due process, personal freedom, honor, dignity [...]" in scenarios such as racial discrimination and gender bias that were found in the COMPAS algorithm in the State Wisconsin vs Loomis case (Roa, Sanabria-Moyano & Dinas-Hurtado, 2022, p. 277-278); the VioGén case took this into consideration, as stated by González et al. (2018), as they emphasize that many police measures allow "working with a higher false positive rate without damaging important rights of the defendant, alleviating the effects and interactions that may be caused in the defendant" (p. 25).

This demonstrates the imperative need for States to consider their international obligations in light of the fundamental rights not only of the victims but also of the perpetrators, because the lack of control of the algorithms used to expedite justice may lead to violations of these rights.

V.   Conclusions

In conclusion, GBV is a social problem that requires significant attention to prevent, given its causes are deeply rooted in society; in addition, it violates women's human rights, generating irreversible consequences. This situation is shown in the international obligations of the States aimed at the duties of prevention, protection, investigation, and sanction, in addition to the specific duties incorporated by the CEDAW in its recommendations.

In view of the systematic occurrence of these behaviors and the limited capacity to deal with all cases, it is necessary to implement measures to reduce and monitor these behavior through risk assessment systems, protocols, and forms implemented worldwide.

Thus, the creation of AI-based tools like the algorithms developed to predict GBV are successful in enabling targeted attention to the victim by constantly reviewing the threats she may suffer and, above all, taking measures based on cooperation between State institutions to prevent serious consequences in terms of violence against women.

Moreover, these measures allow the State to focus on the protection of women from a reactive point of view, putting into action its capacities after the occurrence of aggressions, as well as from a proactive perspective, through analysis of latent threats of which women are aware of and the systematization of violence in already identified places, allowing for institutions to act on the basis of ensuring prevention and precaution against a possible violation of women's rights.

VioGén shows that tools developed with AI can aid in providing care to women victims of GBV, as it warns the authorities to deploy capabilities allowing them to act in advance to counteract such cases. This is compliant with the international obligations of States to prevent violence against women, as well as ensure their sustained protection.

Along the same lines, the system's wide capacity to contribute to the investigation of violence against women is evident, as it allows access to different institutions that may be involved in parts of the process, facilitating access to information, reducing revictimization, and administrative procedures.

However, as seen throughout this article, it is essential to constantly review the system as per the needs arising with the evolution of society, as it is necessary to strengthen the forms and the system, orienting it toward the punishment of violence against women.

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