MODELING OF THE PLITHOGENIC IADOV METHOD TO STRENGTHEN LEGAL AND EDUCATIONAL FRAMEWORKS AGAINST CHEMICAL AGGRESSIONS

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ABSTRACT
In Ecuador, aggressions using chemical substances are recognized as acts of violence capable of inflicting both physical and emotional harm on individuals, with potentially severe medical and psychological repercussions for those who suffer them. These actions, classified as crimes within the country's legal framework, can lead to charges against the aggressors ranging from personal injury to accusations of attempted homicide. Thus reflecting the commitment of Ecuadorian legislation to safeguard victims and ensure an adequate judicial response to such incidents. Therefore, the study aims to propose actions that provide security to citizens who are victims of chemical substance aggression. To this end, a survey was conducted and processed among people affected by chemical substance aggressions and some of their relatives using the Plithogenic IADOV method. Among the main results, dissatisfaction with the handling of these cases during the pandemic is evident. Thus, proposals for actions aimed at increasing citizen security against chemical aggressions are encouraged. The plithogenic intersection between subsets proposes improving prevention and legal management by suggesting measures that seek not only to enhance citizen security but also to optimize legal prevention and response to this type of violence and its effects.
KEYWORDS: Aggressions; chemical substances; victim; legal framework; Plitogenic IADOV.

MSC: 03b52, 62p25, 91d10, 91b06, 93a30

RESUMEN
En Ecuador, las agresiones con sustancias químicas son reconocidas como actos de violencia capaces de infligir tanto daño físico como emocional a las personas, con repercusiones médicas y psicológicas potencialmente graves para quienes las sufren. Estas acciones, clasificadas como delitos dentro del marco legal del país, pueden llevar a cargos contra los agresores que van desde lesiones personales hasta acusaciones de intento de homicidio, lo que refleja el compromiso de la legislación ecuatoriana con la protección de las víctimas y la garantía de una respuesta judicial adecuada. El presente estudio tiene como objetivo proponer acciones que brinden seguridad a los ciudadanos víctimas de agresiones con sustancias químicas. Se realizó una encuesta entre personas afectadas por estas agresiones y algunos de sus familiares, cuyos datos fueron procesados mediante el método Plitogénico IADOV. Los principales resultados muestran insatisfacción con el manejo de estos casos durante la pandemia. Por lo tanto, se promueven propuestas de acciones encaminadas a aumentar la seguridad ciudadana frente a las agresiones químicas. La intersección plitogénica entre subconjuntos propone mejorar la prevención y la gestión legal, sugiriendo medidas que buscan no solo mejorar la seguridad ciudadana, sino también optimizar la prevención y la respuesta legal ante este tipo de violencia y sus efectos.
PALABRAS CLAVE: agresiones, sustancias químicas, víctima, marco legal, Plitogénico IADOV.

Msc :

1. INTRODUCTION

Acid attacks and other chemical substances as manifestations of extreme violence. These acts are characterized by the intention to inflict severe harm through disfigurement, mutilation, torture, or even the death of the victims. Thus, they reflect premeditation and malice inherent in the attacker's behavior. For this, the resulting injuries are classified based on the causative agent, the type and permanence of the sequelae, as well as the duration of the generated disability, whether it is temporary or permanent.

Globally, and specifically in Ecuador, these crimes, although not numerically dominant, have gained notoriety as methods of revenge and are closely linked to acts of gender violence, including femicides [1] [2] [3]. The Constitution of the Republic of Ecuador establishes the state's commitment to protecting life, promoting an environment free of violence, and fostering good living. However, the existence of uncertainty regarding the legal and procedural mechanisms for addressing these crimes is pointed out, emphasizing the need to strengthen prevention and response policies.

According to data from the Institute of Legal Medicine, in Ecuador, between 8 and 12 victims of aggressions with corrosive substances are registered annually, although a significant dark figure is acknowledged due to fear of retaliation and the stigma associated with reporting these crimes. The situation was aggravated during the COVID-

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19 pandemic, a period in which domestic tension increased and, consequently, so did this type of aggression. Thus, shortcomings in legal compliance and awareness of the rights of victims are evident.

Classification of burns and their effect on people.

The classification of the agents causing these injuries is divided into physical (such as cold, heat, electricity, and radiation), chemical (acids, alkalis, medications, fuel, among others), and biological. The resulting burns can have both temporary and permanent effects on health, including scarring, skin discoloration, and damage to internal organs through chemical absorption into the bloodstream [13,15].

Acid attacks are often directed against women as a form of punishment for rejecting sexual proposals or out of jealousy, often involving romantic partners or rejected individuals [16]. The acids most frequently used in these attacks are sulfuric, nitric, and hydrochloric, with the latter being easily accessible in many contexts. The severity of the injuries can affect critical areas of the body, such as the head and trunk, with potentially permanent consequences [9,14].

These attacks not only seek to inflict physical harm but also have a significant psychological and social component, attempting to punish or control the victims through fear and intimidation. The prevalence of this type of violence underscores the need for more effective legal and preventive actions to protect potential victims and punish the perpetrators.

Legal framework.

The legal review underscores the importance of the right to personal integrity as a fundamental pillar of legislation. In such a way, it emphasizes the protection of life and the preservation of the physical, psychological, and moral integrity of the human being. Physical integrity is related to maintaining good health, while psychological integrity encompasses the motor, psychological, and intellectual capacities necessary for personal development. Moral integrity, on the other hand, is associated with the right of each individual to live according to their convictions.

The Constitution of Ecuador firmly establishes the principle of legal security, based on respect for the Constitution and the existence of prior, clear, and public legal norms, applied by competent authorities. In addition, it identifies several vulnerable groups specifically protected by the Magna Carta, to whom the state must guarantee rights and grant benefits.

The right to due process is governed by principles such as legality, procedural challenge, intimacy, contradiction, motivation, impartiality, privacy, confidentiality, and objectivity. Regarding the crime of injuries, Ecuadorian criminal legislation establishes specific sanctions based on the severity of the damage caused to the victim, with penalties ranging from thirty days to seven years of deprivation of liberty, depending on the severity and consequences of the injuries.

However, despite the classification of "Permanent damage to health" in the Comprehensive Organic Criminal Code, there is a notable absence of specific provisions for crimes involving the use of acids and other chemical substances. This omission contrasts with the constitutional principles related to "good living" and underscores the need for these forms of aggression to be adequately considered and classified in the legislation. Article 151 of the mentioned code defines torture in a way that includes inflicting severe pain or suffering, whether physical or psychological, with sanctions of up to thirteen years of deprivation of liberty under certain circumstances. This legislative review highlights the urgency of adapting criminal legislation to offer more comprehensive and effective protection against all forms of aggression that compromise personal integrity.

In this context, researchers propose to develop strategies aimed at providing greater security to citizens affected by chemical substance attacks [6,10] [12]. This approach involves a critical review of current policies and the implementation of concrete measures to improve legal protection and support for victims. This ensures a comprehensive and effective response to this type of violence.

2. NEUTROSOPHIC AND PLITHOGENIC LOGIC.

In neutrosophic sets, indeterminacy is explicitly quantified through a new parameter I. True membership (t), indeterminate membership (I), and false membership (F) are independent of each other, and the sum between them satisfies the inequalities $0 \leq T + I + F \leq 3$ [9]. The term Neutrosophic means knowledge of neutral thought, and this neutrality represents the main distinction between fuzzy logic and intuitionistic fuzzy logic.

If U is a universe of discourse, a Neutrosophic Set (NS) is characterized by three membership functions, $u_A(x), r_A(x), v_A(x) : X \rightarrow\ ]0-, 1+[$, which satisfy the condition

$$0 \leq -\inf u_A(x) + \inf r_A(x) + \inf v_A(x) \leq \sup u_A(x) + \sup r_A(x) + \sup v_A(x) \leq 3+$$

for all $x \in X$. $u_A(x), r_A(x), v_A(x)$ are the membership functions of the truth, indeterminacy, and falsehood of x in A, respectively, and their images are standard or non-standard subsets of $]0-, 1+[$.

Addressing the perspective of indeterminacy and contradiction, as is the case with Gödel's incompleteness theorem, it posits that any proposition in a mathematical axiom system will present a degree of truth (T), falsehood (F), and indeterminacy (I). Neutrosophic, therefore, establishes a unique solution for the existence of paradoxes in philosophy 4,11].

Plithogeny is the genesis or origin, creation, formation, development, and evolution of new entities from dynamics and fusions of multiple previous entities that are contradictory and/or neutral and/or non-contradictory [5,8]. Plithogeny advocates for connections and the unification of theories and ideas in varied fields of science. As "entities," "knowledge" in various fields is taken, such as social sciences, technical sciences, theories of arts and letters, etc.

Plithogeny is the dynamics of various types of opposites, and/or their neutrals, and/or non-opposites and their organic fusion. Plithogeny is a generalization of dialectics (dynamics of one type of opposites: <A> and <antiA>), Neutrosophic (dynamics of one type of opposites and their neutrals: <A> and <antiA> and <neutA>), as Plithogeny studies the dynamics of many types of opposites and their neutrals and non-opposites (<A> and <antiA> and <neutA>, <B> and <antiB> and <neutB>, etc.), and many non-opposites (<C>, <D>, etc.) all together. As an application and particular case derived from Plithogeny, the plithogenic set is an extension of the classical set, fuzzy set, intuitionistic fuzzy set, and neutrosophic set, and has multiple scientific applications.

So, it is called a plithogenic set.(P, a, V, d, c)

1. Where "P" is a set, "a" is an attribute (multidimensional in general), "V" is the range of values of the attribute, "d" is the degree of membership of the attribute value of each element x to the set P for some given criteria ($x \in P$), and "d" means "d_F" or "d_{IF}" or "d_N", when it is a degree of fuzzy membership, an intuitionistic fuzzy membership, or a degree of neutrosophic membership, respectively, of an element x to the plithogenic set P;
2. "c" means "c_F" or "c_{IF}" or "c_N", when it is a fuzzy attribute value contradiction degree function, intuitionistic fuzzy attribute value contradiction degree function, or neutrosophic attribute value contradiction degree function, respectively.

Functions are defined according to the applications that experts need to solve. $d(\cdot,\cdot)$ and $c(\cdot,\cdot)$ then, the following notation is used: $x(d(x,V))$, where $d(x,V) = \{d(x,v)$, for all $v \in V\}, \forall x \in P$. The attribute value contradiction degree function is calculated between each attribute value for the dominant attribute value (denoted by) in particular, and also for other attribute values v_D.

The attribute value contradiction degree function c evaluated between the values of two attributes is used in the definition of plithogenic aggregation operators (intersection (AND), union (OR), implication ($\Longrightarrow$), equivalence ($\Longleftrightarrow$), inclusion (partial order), and other plithogenic aggregation operators that combine two or more attribute value degrees based on a t_{norm} and a t_{conorm}. Most plithogenic aggregation operators are linear combinations of fuzzy t_{norm} (indicated by) with a fuzzy t_{conorm} (indicated by), but non-linear combinations can also be constructed $\wedge_D$ and $\vee_D$.

If the t_{norm} is applied to the dominant attribute value denoted by v_D, and the contradiction between v_D and v_2 is $c(v_D, v_2)$, then it is applied to the attribute value v_2 as follows:

$$[1 - c(v_D, v_2)] \cdot t_{norm}(v_D, v_2) + c(v_D, v_2) \cdot t_{conorm}(v_D, v_2), \quad (1)$$

Or according to the following expression:

$$[1 - c(v_D, v_2)] \cdot (v_D \wedge_F v_2) + c(v_D, v_2) \cdot (v_D \vee_F v_2), \quad (2)$$

Similarly, if the t_{conorm} is applied to the value of the dominant attribute denoted by v_D, and the contradiction between v_D and v_2 is $c(v_D, v_2)$, then it is applied to the attribute value v_2 as shown below:

$$[1 - c(v_D, v_2)] \cdot t_{conorm}(v_D, v_2) + c(v_D, v_2) \cdot t_{norm}(v_D, v_2), \quad (3)$$

Or, according to the following expression:

$$[1 - c(v_D, v_2)] \cdot (v_D \vee_F v_2) + c(v_D, v_2) \cdot (v_D \wedge_F v_2), \quad (4)$$

The plithogenic neutrosophic intersection is defined as:

$$(a_1, a_2, a_3) \wedge_P (b_1, b_2, b_3) = \left(a_1 \wedge_F b_1, \frac{1}{2}[(a_2 \wedge_F b_2) + (a_2 \vee_F b_2)], a_3 \vee_F b_3\right), \quad (5)$$

The plithogenic neutrosophic union is defined as:

$$(a_1, a_2, a_3) \vee_P (b_1, b_2, b_3) = \left(a_1 \vee_F b_1, \frac{1}{2}[(a_2 \wedge_F b_2) + (a_2 \vee_F b_2)], a_3 \wedge_F b_3\right), \quad (6)$$

In other words, regarding what applies to membership, the opposite applies to non-membership, while for indeterminacy, the average between them is applied. Next, an algorithm for resolving this research is presented, where Plithogeny is merged with the Neutrosophic algorithm. From this point forward, the previously mentioned expressions should be applied to execute the operations of the classic algorithm with plithogenic numbers.

To create a single decision matrix, the median of the plithogenic numbers for each combination, for all specialists, is calculated. The median is calculated using the following formula:

$$\text{median}_{i=1}^{m}\{PN_i\} = (\text{median}_{i=1}^{m}\{T(PN_i)\}, \text{median}_{i=1}^{m}\{I(PN_i)\}, \text{median}_{i=1}^{m}\{F(PN_i)\}), \quad (7)$$

Where PN_i, are plithogenic numbers, $T(PN_i)$ are their truth components, $I(PN_i)$ are their indeterminate components, and $F(PN_i)$ are their falsehood components. In other words, it means that the median of a set of plithogenic numbers is defined as the plithogenic number of the medians of its components.

To compare the relationships between the quadrants, the following formula is used to blur a neutrosophic number. To compare the relationships between the quadrants, the following formula is used to blur a neutrosophic number[5]:

$$\mathcal{S}([\mathrm{T},\mathrm{I},\mathrm{F}]) = \frac{2+\mathrm{T}-\mathrm{I}-\mathrm{F}}{3} \quad (8)$$

- Determine for each line of the pairwise comparison matrix, a weighted sum based on the sum of the product of each cell times the priority of each corresponding alternative or criterion (see Table 1).

Linguistic Expression	Scale	Plithogenic number (T, I, F)	S
Poor Importance (PI)	0	(0.12, 0.92, 0.97)	0.08
Less Important (LI)	1	(0.27, 0.87, 0.82)	0.19
Low Importance (LWI)	2	(0.42, 0.67, 0.72)	0.34
Moderately Important (MDI)	3	(0.57, 0.52, 0.62)	0.48
Important (I)	4	(0.72, 0.37, 0.52)	0.61
More Important (MI)	5	(0.82, 0.27, 0.12)	0.81
Very Important (VI)	6	(0.97, 0.07, 0.03)	0.96

Table 1: Linguistic expression to determine the level of importance of the factor on the variable. Source: own elaboration.

- For each line, divide its weighted sum by the priority of its corresponding alternative or criterion.
- Determine the average λmax of the result of the previous stage.
- Calculate the consistency index (CI) for each alternative or criterion.

$$CI = \frac{\lambda_{max} - m}{m-1} \quad (9)$$

Where *m* is the number of alternatives

- Determine the Random Index (RI) from Table 2
- Determine the consistency quotient index (the ratio between the consistency index and the random index.
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3. METHOD

The Neutrosophic IADOV technique integrates traditional IADOV methodology with neutrosophic logic to assess satisfaction levels, accounting for uncertainty and contradictions in expert opinions. The steps to apply this technique are as follows

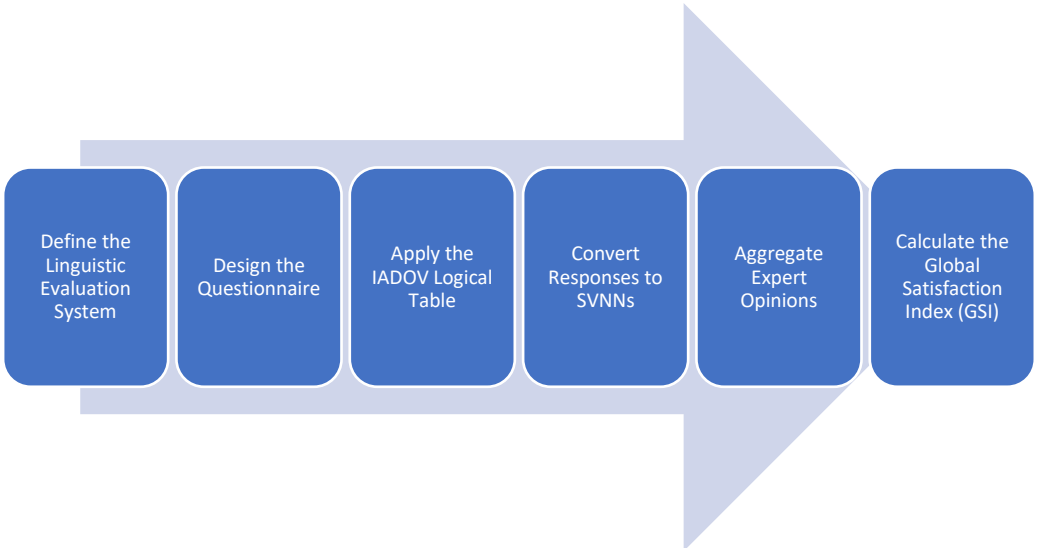

Figure 1: IADOV Methodological Framework

To apply the neutrosophic IADOV technique, experts must rely on a linguistic evaluation system that reflects the expert's opinion. This system and its neutrosophic and numerical equivalents are shown in Table 2.

Linguistic term	SVNN	Scale
Clearly satisfied	(1,0,0)	3

More satisfied than dissatisfied	(1,0.35,0,35)	23
Undefined	I	1.5
More dissatisfied than satisfied	(0.35,0.35,1)	1
Clearly dissatisfied	(0,0,1)	0
Contradictory	(1,0,1)	2

Table 2: Evaluation system for experts. Linguistic terms are associated with their neutrosophic evaluation and score value. Source: own elaboration.

The term I in Neutrosophic is interpreted as a unit of indeterminacy. Another component of the method is the IADOV Logical Table, which assigns numerical values to three closed questions applied to the experts (see Table 3). If necessary, open-ended questions can be included in the surveys.

Approaches	**Possible answers**								
1st QUESTION	Do you think that the level of response to aggressions with chemical substances satisfies the victims and their families?								
2nd QUESTION	Yes			I don't know			No		
Do you think that a Response System for attacks with chemical substances should be developed?	Yes	I don't know	No	Yes	I don't know	No	Yes	I don't know	No
3rd QUESTION	How do you perceive the results obtained in the judicial processes regarding aggressions with chemical substances?								
Clear satisfaction	1	2	6	2	2	6	6	6	6
More satisfied than dissatisfied	2	3	3	2	3	3	6	3	6
Undefined	3	3	3	3	3	3	3	3	3
More dissatisfied than satisfied	6	3	6	3	4	4	3	4	4
Clear dissatisfaction	6	6	6	6	4	4	6	4	5
Contradictory	2	3	6	3	3	3	6	3	4

Table 3: Logical Framework of the IADOV Method. Source: own elaboration.

To survey the satisfaction level of experts, the neutrosophic IADOV technique was used. This technique is based on the use of Single-Valued Neutrosophic Sets (SVNS) associated with linguistic variables or their ability to enhance interpretation in recommendation models and the use of indeterminacy.
The definition of SVNS is as follows, let X be a universe of discourse. An SVNS A over X is an object of the form[9].

$$A = \{[x, u_a(x), r_a(x), v_a(x)] : \in X\}\, dA = \{[x, u_a(x), r_a(x), v_a(x)] : \in X\} d \quad (10)$$

Where $u_a(x)$: $X \rightarrow [0,1], r_a(x)$: $X \rightarrow [0,1]$ y $v_a(x)$: $X \rightarrow [0,1]$,
With $0 \leq u_a(X), r_a(X), v_a(X) \leq 3, \forall x \in X$
For convenience, a Single Value Neutrosophic Number (SVNS) will be expressed as$A = (a, b, c)$, where $a, b, c \in [0,1]$ and satisfies $0 \leq a + b + c \leq 3$.
Aggregation operators are used to find a single SVNS set that describes several sets at the same time. One of these operators is the neutrosophic weighted average (WA), which is defined as follows
Let $\{A_1, A_2, \dots, A_n\} \in SVNS\,(x)$, where $A_j = (a_j, b_j, c_j)(j = 1, 2, \dots, n)$, the Neutrosophic Weighted Average (WA) operator is calculated as[9]:

$$WA\,(A_1, A_2, \dots, A_n) = \sum_{i=1}^{n} [w_j\,, A_i] \quad (11)$$

Where $WA\,(w_1, w_2, \dots, w_n) = \sum_{i=1}^{n} [w_j\,, A_i]$ is the $A_j\ (j = 1,2, \dots, n)$ vector such that $w_n \in [0,1]$ and $\sum w_j = 1$.
To calculate the Global Satisfaction Index (GSI) of the respondents, the WA aggregation operator was used, taking into account the score values and that all respondents have the same weight, so $w_i = \frac{1}{n}$.

4. RESULTS

The research analyzed five cases of chemical substance aggressions that occurred during the pandemic. For the modeling of the information, the Plithogenic IADOV method was applied to evaluate the satisfaction of the victims and their families regarding the legal treatment received (see Figure 1).

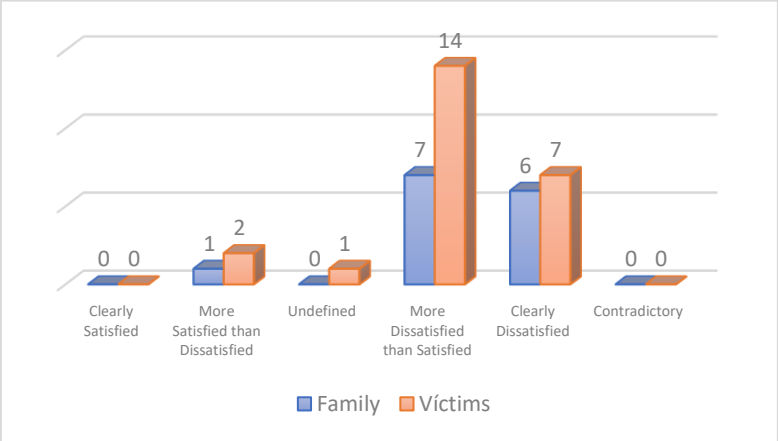

Figure 1: Satisfaction levels of the expert group for each factor. Source: Own elaboration.

The study involved individuals, including victims and relatives, who revealed pronounced dissatisfaction with judicial processes. Many attribute this dissatisfaction to perceived neglect during the pandemic, which exacerbated their discomfort and underscored the need for additional psychological support. The calculations of the Global Satisfaction Index (GSI) according to the observation frequency and the individual satisfaction indexes of this subset and their corresponding scores are shown in Tables 4 and 5, for each analyzed subset.

Linguistic term	**SVNN**	**Punctuation (S)**	**Frequency (F)**	**FS**	**(FS)/n**
Clearly satisfied	(1,0,0)	3	0	0	0.00
More satisfied than dissatisfied	(1,0.35,0.35)	23	1	2.5	0.18
Undefined	I	1.5	0	0	0.00
More dissatisfied than satisfied	(0.35, 0.35.1)	1	7	7	0.50
Clearly dissatisfied	(0,0,1)	0.5	6	3	0.21
Contradictory	(1,0,1)	2	0	0	0.00
Group Satisfaction Index					**0.89**

Table 4: Calculation of the GSI of the legal and judicial framework subset according to the perspective of assault victims. Source: Own elaboration.

Linguistic term	**SVNN**	**Punctuation (S)**	**Frequency (F)**	**FS**	**(FS)/n**
Clearly satisfied	(1,0,0)	3	0	0	0.00
More satisfied than dissatisfied	(1,0.35,0.35)	2.5	2	5	0.21
Undefined	Yo	1.5	1	1.5	0.06
More dissatisfied than satisfied	(0.35, 0.35.1)	1	14	14	0.58
Clearly dissatisfied	(0,0,1)	0.5	7	3.5	0.15
Contradictory	(1,0,1)	2	0	0	0.00
Group Satisfaction Index					**1.00**

Table 5: Calculation of the ISG of the legal and judicial framework subset according to the perspective of the victim's relatives. Source: Own elaboration.

From the analysis of the legal and judicial subset, it can be observed that patients are *mostly dissatisfied rather than satisfied* and *clearly dissatisfied*. The survey revealed that neither the victims nor their families felt satisfied with the handling of the cases. This indicates a significant gap between justice expectations and the experienced reality. This finding highlights the urgency of improving legal actions and awareness to protect and safeguard the victims of these aggressions.

When analyzing this neutrosophic subset concerning the plithogenic variable of the *level of response to chemical aggression*, it can be argued that the contradiction levels are at zero. Meanwhile, the resulting indeterminacy

reflects the discomfort due to the importance of the process of protecting the victims of the aggressions. Therefore, the obtained results should be taken into the plithogenic logic and analyzed both within and outside the subset. To do this, an extension to the IADOV method should be carried out when analyzing the results and their intersection within the plithogenic set.

To perform a plithogenic analysis of the IADOV results, we must first consider that aggressions with chemical substances represent a severe form of violence. Such violence inflicts lasting physical and psychological harm on the victims and has profound implications for their family and social environment. Therefore, to determine the scope of this factor and how it affects society, we need to understand the characteristics of the plithogenic set (see Table 6).

Plithogenic set:	Response system to aggressions with chemical substances, $\forall F_{V_n} = \{F_{V_1}, F_{V_2}, F_{V_3}\}$
Subset Attributes:	• Prevention of attacks, $\forall F_{V_{1n}} = \{F_{V_{11}}, F_{V_{12}}, F_{V_{13}}, F_{V_{14}}\}$ • Treatment of victims, $\forall F_{V_{2n}} = \{F_{V_{21}}, F_{V_{22}}, F_{V_{23}}\}$ • Legal and judicial framework, $\forall F_{V_{3n}} = \{F_{V_{31}}, F_{V_{32}}\}$
Variable:	Level of response to aggressions with chemical substances.
Factor (F):	Attacks with chemical substances.
Measuring scale	Linguistic term (See Table 1).

Table 6: Characteristics of the plithogenic set. Source: own elaboration.

As can be seen, the plithogenic set is composed of three subsets: V_1, V_2, and V_3. Therefore, a plithogenic set consisting of 7 attributes is defined, each with its respective attributes and possible values in linguistic expression to determine the level of importance of the factor on the variable (see Table 5). Additionally, it can be observed that for this analysis, the attributes of aggression prevention and victim treatment were expanded, as well as the sub-dimensions they interact with (see Table 7).

No.	Dimension	COD	Sub-dimension or factor	$d_n(x; V_n)$	Attribute value
V1	Aggression prevention	v11	Education and Awareness	(0.82, 0.27, 0.12)	MI
		v12	Control and regulation of substances	(0.72, 0.37, 0.52)	I
		v13	Community programs	(0.97, 0.07, 0.03)	VI
		v14	Awareness campaigns	(0.82, 0.27, 0.12)	MI
V2	Treatment of victims	v21	Immediate medical attention	(0.57, 0.52, 0.62)	MDI
		v22	Psychological support	(0.42, 0.67, 0.72)	LWI
		v23	Long-term rehabilitation	(0.72, 0.37, 0.52)	I
V3	Legal and judicial framework	v31	Protection of victims	(0.27, 0.87, 0.82)	MI
		v32	Prosecution of offenders	(0.82, 0.27, 0.12)	MI

Table 7: Structure, d_N, and attribute value within the plithogenic set. Source: own elaboration.

A plithogenic multi-attribute set of dimension 3 and cardinality 4x3x2 = 24 is represented, with dominant values in attributes v_{13}, v_{23}, and v_{32}. Therefore, the degrees of contradiction between the values for each attribute within each dimension are defined:

- Dimension V_1: $c_N(v_{13}, v_{11}) = 0.10$; $c_N(v_{13}, v_{12}) = 0$; $c_N(v_{13}, v_{14}) = 0.06$
- Dimension V_2: $c_N(v_{23}, v_{21}) = 0.05$; $c_N(v_{23}, v_{22}) = 0.10$
- Dimension V_3: $c_N(v_{32}, v_{31}) = 0$

When v_{23}, v_{13}, and v_{32} are activated, it triggers the union and interaction with the other attributes, indicating that the level of response to chemical aggression is caused by:

- The deficit of community programs aimed at preventing aggression (dominant value in the plithogenic subset V_1).
- There is no focused long-term rehabilitation follow-up in the treatment of victims of aggression (dominant value in the plithogenic subset V_2).
- The delay in processing aggressors within the legal and judicial framework (dominant value in the plithogenic subset V_3).

From these three neutrosophic subsets analyzed, it is observed that the most dominant within the plithogenic set is the element aimed at preventing aggression through community programs. This subset constitutes the gateway to aggression with chemical substances, while the other subsets are focused after the aggression has occurred. To determine a level of solution, it is necessary to know which subsets to act on through the relationship and the level of importance (Table 8), as follows:

- Community programs and long-term rehabilitation (see Table 9).
- Community programs and aggressors' processing (see Table 10).

V_{13}	V_{23}	V_{32}
VI(0.97, 0.07, 0.03)	**I**(0.72, 0.37, 0.52)	**MI**(0.82, 0.27, 0.12)

Table 8. Evaluations between the elements of the sub-dimensions (v_{13}), (v_{23}), and (v_{32}). Source: Own elaboration.

Neutrosophic Plithogenic Union	S_N	**Assessment**
(a1, a2, a3) $\vee_p$ (b1, b2, b3) = (a1$\wedge_d$b1,$\frac{1}{2}$[(a2$\wedge_d$b2)+(a2$\vee_d$b2)], a3$\wedge_d$b3)	0.7913	It is located in a sublevel between I and MI
(a1, a2, a3) $\vee_p$ (b1, b2, b3) = (0.82,0.22,0.23)		

Table 9: Plithogenic neutrosophic union between sub-dimensions V_{13} and V_{23}. Source: own elaboration.

Neutrosophic Plithogenic Intersection	S_N	**Assessment**
(a1, a2, a3) $\wedge_p$ (b1, b2, b3) = (a1$\wedge_d$b1,$\frac{1}{2}$[(a2$\wedge_d$b2)+(a2$\vee_d$b2)], a3$\vee_d$b3)	0.8753	It is located in a sublevel between MI and VI
(a1, a2, a3) $\wedge_p$ (b1, b2, b3) = (0.88,0.17,0.08)		

Table 10: Plithogenic neutrosophic intersection between sub-dimensions V_{13} and v. Source: own elaboration.

There is a stronger relationship between the subsets of *aggression prevention and legal and judicial framework [in their attributes (v_{13}) and (v_{23})]* than *between aggression prevention* and *victim treatment*, considering the most predominant factors. A relationship closer to *more important than very important* is obtained according to the neutrosophic plithogenic union and intersection operator. Therefore, solutions should focus on addressing factors (v_{13}) and (v_{32}) that affect the development of education. Consequently, the intersection of both subsets generates a plithogenic area called chemical education and legislation with a $d_n(x;\ V_n)$ of (0.88, 0.17, 0.08). Therefore, actions are proposed to address these needs, focused on both the legal and prevention and education fields (see Table 11). These include ensuring adequate punishment for aggressors and offering legal training and advice to the population.

No.	Action/alternative	Description and scope	Implementation	Time
1	Multimedia educational campaigns.	Dissemination of dangers and legal consequences of chemical aggressions through various means.	Content creation and alliances with media.	1-6 months
2	School awareness programs.	Integration of programs on legal and social responsibility against chemical aggressions in the school curriculum.	Collaboration with educational institutions for curricular development.	6-12 months
3	Specialized training for law enforcement.	Training in handling chemical incidents and evidence collection.	Organize workshops and courses with experts in chemistry and legislation.	3-6 months
4	Strengthening the legal framework.	Strengthening laws related to chemical assaults to ensure adequate punishments.	Legal analysis and proposals for modification or new laws.	6-12 months
5	Creation of a helpline.	Legal and psychological assistance for victims of chemical attacks.	Establishment of helpline services and an online portal.	3-6 months
6	Collaboration with the chemical industry	Implementation of controls on hazardous substances to reduce their availability.	Agreements and regulatory policies with chemical companies.	6-12 months

7	Observatory of chemical aggressions.	Monitoring and analysis of cases for the creation of effective public policies.	Development of data infrastructure and collaboration with research entities.	12-24 months

Table 11: Strategies to strengthen the prevention and legal management of chemical aggressions. Source: own elaboration.

6. CONCLUSION

Acid attacks represent a severe form of violence that inflicts lasting physical and psychological harm on victims and has profound implications for their families and social environment. This type of aggression, which is increasing both in Ecuador and globally, demands a more decisive legislative and social response. The integration of the IADOV Plithogenic method offers a detailed and nuanced way to assess the satisfaction or adequacy of different attributes in a complex system. By applying this method to the analysis of responses to chemical aggression, it is possible to more precisely identify where to focus improvement efforts based on the plithogenic evaluation of each component of the system. It is crucial to implement stricter sanctions for perpetrators of chemical aggression, underlining the premise that the intention behind these acts is to cause significant harm. Based on expert recommendations, the importance of adopting specific measures to prevent these crimes in Ecuador is emphasized, advocating for the well-being of victims and public safety.

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