



# Use of the Iadov method to measure the implementation of a program for sexual abuse prevention in Ecuador

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**Abstract.** This article is the result of the research carried out in Alejandro Rafael Mera Educational Unit, which aimed to implement a program for teachers and parents to prevent sexual abuse in children of that institution. Qualitative-quantitative research was carried out; Data were observed and collected through a survey directed to teachers and parents to determine the level of knowledge they have regarding sexual abuse. Once the program aimed at teachers and parents for the prevention of sexual abuse in children and adolescents is implemented, this program was validated using the Iadov method and neutrosophic logic, to determine the level of satisfaction existing about its implementation in the Alejandro Rafael Mera-Tulcán educational unit. Preventive strategies were developed as a part of the current Health model, where the main risk factors, consequences, and the most appropriate prevention measures were identified in order to reduce the risk of child sexual abuse.

**Keywords:** Prevention, sexual abuse, mental health, mental health in the infancy, Iadov method, neutrosophic logic

## 1 Introduction

In a study conducted by on "Child Abuse" it is evident that sexual abuse is a global problem with serious consequences that can last a lifetime.

In studies conducted by [1] on child sexual abuse in the first decade of the 21st century, it is evident that child sexual abuse is one of the least visible forms of violence. Unfortunately, it is a reality that hurts the family and society in a gross and cruel way. Most of the population considers this type of acts as belonging to people of no confidence, sociopathic who take refuge in remote and obscure places, far from the common gaze to commit these crimes. Certainly that happens, but there are other forms of sexual abuse that have underage victims, mainly female, among their victims, and they happen close, even inside, of the child's own environment.

According to in his article on "Sexual Violence in Latin America and the Caribbean" [2] it is said that the number of studies on sexual abuse in Latin America has increased in the last two decades, being one of the clearest manifestations of values, norms and traditions in a patriarchal culture that encourage men to believe that they have the right to control women's bodies and sexuality.

According to [3] in his study "Ecuador, the country of violence without limits" reveals that, in Ecuador, sexual violence from educational institutions is disguised by the same institutions, which generally blame children, adolescents or their mothers of these aggressions, generating even stigma, which dissuades other people from denouncing. And in spite of the existence of a route for the eradication of sexual crimes in the educational field this is not implemented, leaving without sanction the aggressors, being able to reach even more serious cases such as murder and rape of children. It is estimated that in Ecuador there is a strong underreporting of crimes of sexual violence against girls and adolescents, several fathers and mothers of assaulted children refused to file complaints for in fear that their sons and daughters will be stigmatized in the future. [4]

Refers [5], in his article published in the newspaper La Prensa "20 cases of indecent assault in the Carchi" he declares that Tulcan is the city with the most complaints filed, of all the complaints only eleven are resolved while the remaining nine are in process, according to different data it is established that most of these crimes occur within the family.

Based on the analysis carried out, it implements the sexual abuse prevention program in the Alejandro Rafael Mera-Tulcán educational unit. It is validated through the Iadov method and neutrosophic logic [6], techniques that constitute an indirect way to measure the satisfaction of users when making use or reference of the behaviors established by the prevention program on sexual abuse.

This technique is used, as suggested by the original method. The related criteria of answers to intercalated questions whose relationship the individual does not know, at the same time the unrelated or complementary questions serve as an introduction and support of objectivity to the respondent who uses them to locate and contrast the answers.

The result of these questions interacts through what is called the "Iadov Logical Table". In the present work, the satisfaction of the respondents is combined with the introduction of the neutrosophic estimation to look for a solution to the problems of indetermination that appear universally in the evaluations of the surveys and other instruments, taking advantage of not only the opposing and opposing positions, but also the neutral or ambiguous. Assuming that every idea  $\langle A \rangle$  tends to be neutralized, diminished, balanced by ideas, in clear rupture with the binary doctrines in the explanation and understanding of phenomena [7].

## 2 Materials and methods

A descriptive study was carried out, modality of the qualitative-quantitative, non-experimental paradigm, where with a population of 970 parents and 40 teachers, formula 1 was applied to calculate the sample size.

$$n = N / (e^2 \cdot (N - 1) + 1) = 284 \quad (1)$$

Where:

N = Total population

e = expected proportion (in this case 5% = 0.05)

N = 1 - N (in this case 1-0.05 = 0.95)

In this way, the research after application of educational strategies is carried out on 284 parents and 40 teachers. The inductive and deductive methods to obtain conclusions and the synthetic analytic allowed determining the current situation of knowledge of the subject; and the validation of results.

The Iadov method and neutrosophical logic are applied to measure the satisfaction of users when making use or reference of the behaviors established by the implemented prevention program on sexual abuse.

To apply the Iadov method and the neutrosophical logic, 21 subjects of the selected sample were selected, to whom a survey was applied, aimed at the knowledge and satisfaction that they have with respect to the implementation of the sexual abuse prevention program, in unit Alejandro Rafael Mera-Tulcán.

The survey was prepared based on 7 questions, three closed questions interspersed in four open questions; of which 1 fulfilled the introductory function and three functioned as reaffirmation and support of objectivity to the respondent.

The questionnaire used in the survey was useful to measure the satisfaction of users when making use or reference of the behaviors established by the prevention program on sexual abuse, implemented in the Alejandro Rafael Mera-Tulcán educational unit. To measure the impact of the implementation of the program, five questions were taken into account, three of which were closed and two open. The three closed questions correspond to the "Iadov logic table", which is presented adapted to the current investigation and is shown in table 1..

	1. Would it be appropriate to dispense with the prevention program on sexual abuse implemented in the Alejandro Rafael Mera-Tulcán educational unit?								
	No			I don't know			Yes		
2. Does the implementation of the prevention program on sexual abuse, implemented in the Alejandro Rafael Mera-Tulcán educational unit, meet your expectations?	3. If you could freely choose an option to measure if the implementation of the prevention program on sexual abuse implemented in the Alejandro Rafael Mera-Tulcán educational unit is appropriate, which one would you choose?								
	Yes	I don't know	No	Yes	I don't know	No	Yes	I don't know	No
Very satisfied.	1	2	6	2	2	6	6	6	6
Partially satisfied.	2	2	3	2	3	3	6	3	6

I don't care.	3	3	3	3	3	3	3	3	3
More unsatisfied than satisfied.	6	3	6	3	4	4	3	4	4
Not at all satisfied.	6	6	6	6	4	4	6	4	5
<b>I don't know what to say.</b>	2	3	6	3	3	3	6	3	4

**Table 1:** Logic table of V.A. Iadov to measure the satisfaction of users when making use or reference of the behaviors established by the prevention program on sexual abuse, implemented in the Alejandro Rafael Mera-Tulcán educational unit. Source: Own elaboration.

The number resulting from the interrelation of the three questions indicates the position of each respondent in the satisfaction scale, that is, their individual satisfaction. This satisfaction scale is expressed by SVN numbers. The original definition of truth value in neutrosophic logic is shown below [8].

Let  $N = \{(T, I, F): T, I, F \subseteq [0,1]\}$ , a neutrosophic valuation is a mapping of a group of formulas propositional to  $N$ , and for each sentence  $p$  we have:

$$v(p) = (T, I, F) \tag{2}$$

With the purpose of facilitating the practical application to decision-making and engineering problems, the proposal of the single-value neutrosophic sets [7] (SVNS) was made, which allows the use of linguistic variables [8] and increases the interpretability in the recommendation models and the use of indeterminacy[9].

Let  $X$  be a universe of discourse. An SVNS  $A$  over  $X$  is an object of the form.

$$A = \{(x, u_A(x), r_A(x), v_A(x)): x \in X\} \tag{3}$$

Where:

$$u_A(x): X \rightarrow [0,1], r_A(x): X \rightarrow [0,1] \text{ y } v_A(x): X \rightarrow [0,1], \text{ con } 0 \leq u_A(x) + r_A(x) + v_A(x) \leq 3 \text{ for all } x \in X.$$

The interval  $u_A(x)$ ,  $r_A(x)$  and  $v_A(x)$  represents the true, indeterminate and false membership of  $x$  in  $A$ , respectively. An SVN number, to measure whether the implementation of the prevention program on sexual abuse, implemented in the Alejandro Rafael Mera-Tulcán educational unit is adequate, in the current study this result is expressed as  $A = (a, b, c)$ , where  $a, b, c \in [0,1]$ , and  $a + b + c \leq 3$ . The obtained SVN numbers are useful for recommendation systems.

To analyze the results, a scoring function is established. To sort the alternatives, an adapted score function [10] is used:

$$s(v) = T - F - I \tag{4}$$

In case that the evaluation corresponds to the indeterminacy (not defined) ( $I$ ), a process of de-neutrosification was developed as proposed by Salmerona and Smarandache [10]. In this case,  $I \in [-1,1]$ , Finally, we work with the average of the extreme values  $I \in [0,1]$  to obtain a simple value.

$$\lambda([a_1, a_2]) = \frac{a_1 + a_2}{2} \tag{5}$$

Where  $v_i$  corresponds to the importance of the source. This proposal allows filling a gap in the literature of Iadov's techniques, extending it to deal with the indeterminacy and the importance of the user due to experience or any other reason [6].

Based on the aforementioned, to measure the individual satisfaction of each respondent, the individual satisfaction scale shown in Table 2 was used.

Expression	SVN Number	Score
Clear Satisfaction	(1, 0, 0)	1
More satisfied than dissatisfied	(1, 0.25, 0.25)	0.5
Not defined	I	0
More dissatisfied than satisfied	(0.25, 0.25, 1)	-0.5
Clear dissatisfaction	(0,0,1)	-1
Contradictory	(1,0,1)	0

**Table 2.** Scale of individual satisfaction. Source: [11]

### 3 Results

Regarding the evaluation of the level of satisfaction of the educational activities carried out on the sexual abuse of teachers and parents of the Alejandro R. Mera Educational Unit after applying the prevention program. The short and long term consequences and the preventive measures of sexual abuse are generally unknown, the parents do not have enough knowledge about what sexual abuse is. In the same way there was a high ignorance of topics related to sexual abuse, in particular how to identify a child who is a victim of sexual abuse, the consequences, how to help him and the preventive measures.

The importance of continuing to train teachers and parents of the Alejandro R. Mera Educational Unit, on the prevention of sexual abuse, is shown in the survey made this aspect as positive. The participants are unaware of the most appropriate measures to prevent sexual abuse. For which it is important to provide constant training to teachers and parents to achieve good prevention of child sexual abuse.[11]

It was verified that after applying the different strategies there is the capacity to identify a child who has been a victim of sexual abuse, since they know the indicators to determine if a girl, a child, or adolescent is being a victim of sexual abuse. It demonstrates the importance of the implementation of the prevention program to contribute to the knowledge that the participants have, thus preventing the sexual abuse of children.

The result of applying the IADOV technique to the criteria presented in the survey to measure the satisfaction of users when making use or reference of the behaviors established by the prevention program on sexual abuse, implemented in the Alejandro Rafael Mera-Tulcán educational unit, is shown in table 3.

Expression	Total	%
Clear Satisfaction	17	70.8
More satisfied than dissatisfied	7	29.2
Not defined	0	0
More dissatisfied than satisfied	0	0
Clear dissatisfaction	0	0
Contradictory	0	0

**Table 3:** Results of the application of the IADOV technique to measure the satisfaction of the users to make use or reference of the conducts that establishes the program for sexual abuse prevention. Source: self-made

The calculation of the score is made and the calculation of Iadov is determined, for our case of study a value was assigned in the vector of weights equal  $w_1 = w_2 = \dots = w_i = 0.047$ . The final result of the method is ISG = 0.86, showing that there is a high level of satisfaction on the part of users when making use or reference of the behaviors established by the implemented prevention program on sexual abuse.

### Conclusion

After the implementation of the strategies, teachers and parents of the Alejandro R. Mera Educational Unit have extensive information regarding child sexual abuse, its risk factors, consequences and prevention measures, that is, they already know how to prevent child sexual abuse.

Teachers and parents took the educational program with the best acceptance because it is an activity for the health of their children, obtaining positive results, thanks to education on prevention of sexual abuse.

The process of measuring user satisfaction by making use or reference of the behaviors established by the

prevention program on sexual abuse, implemented through the neutrosophic Iadov technique, quantitatively expressed a high satisfaction rate with regard to the behaviors established by the prevention program on sexual abuse, implemented in the Alejandro Rafael Mera-Tulcán educational unit.

The results obtained were of vital importance to verify the quality, validity and feasibility of the suggested proposal, demonstrating that education contributes to prevent sexual abuse in children and adolescents of the Alejandro R. Mera Educational Unit, and improve their life quality, allowing them to achieve social and emotional well-being.

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