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Clinical Signature among Victims of Intimate Partner Violence: A Study using Text Classification Tools

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Objective: To analyze the text classification with word cloudas a tool to understand the pattern of patient functioning, complementing the qualitative analysis.

Method: It is a text classification study with a word cloud analysis technique, complementing the qualitative analysis. The sample is fifty-six women victims of self-reported domestic violence, who came from a public service in South of Brazil.

Results: A word cloud was developed from the speech of the 56 participants.

Discussion: The women's discourse in the interviews had focused on understanding what had really happened in their relationship, reporting their abusive situations. Studies using this technique benefit from including heterogeneous patients considering their idiosyncrasies to develop a complex non-linear pattern relating predictors to the clinical outcome.

Keywords: *intimate partner violence, word cloud, qualitative research.*

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Clinical Signature among Victims of Intimate Partner Violence: A Study using Text Classification Tools

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Conclusion: It was possible to understand the pattern of patient functioning from the text classification tool. The violence or a consequence of it represents internal obstacles of the victim to regulate her emotional experience and stress.

Keywords: intimate partner violence, word cloud, qualitative research.

I. Introduction

Violence against women, particularly intimate partner violence (IPV) is a major public health problem and a violation of women's human rights. Worldwide, 35% of women who have been in a relationship have experienced physical and/or sexual violence by their intimate partner. Based on World Health Organization data, women's lifetime exposure to intimate partner violence is associated with myriad health outcomes, like fatal outcomes, lead to injuries, depression, post-traumatic stress and other anxiety disorders, sleep difficulties, eating disorders, and suicide attempts (WHO, 2017). Not surprisingly, IPV is the second most common risk factor for disability-adjusted life years globally in women aged 20–24 years (Mokdad, 2016).

IPV is challenging to identify and address. Healthcare professionals play a significant role in identifying women who are usually exposed to domestic violence, identifying the signs of violence, protecting victims from experiencing violence again, and providing support to victims (Yaman Efe, 2012). Considering the significance of the issue, it is important to explore the speech of the victim at the time of the complaint, what are the most representative aspects in his speech, since it has been about violence for years. Why did you report it now? Which treatment is best suited to your needs?

We began to explore the victim's discourse to develop a model to understand the real needs of these victims at the time of reporting. Thus, patients benefit from more accurate treatment plans, avoiding prolonged periods of "trial and error" seeking the correct treatment to avoid revictimization, because women victims of domestic violence have difficulties in adhering to some treatment. The present study aims to analyze the text classification with word cloud as a tool to understand the pattern of patient functioning, complementing the qualitative analysis.

II. Methods

a) Study design

It is a text classification study with a word cloud analysis technique, complementing the qualitative analysis. It is complementary to a larger research, still in progress.

b) Sample

Fifty-six women victims of self-reported domestic violence, who came from a public service in South of Brazil. We included all women who were present on collection days in December 2017 and agreed to participate in the study.

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c) Instrument

We collect sociodemographic data from women such as: age, schooling level, family income, time of marital relationship, living with, use of drugs, existence of parental violence (transgenerationality of violence), among others. We also conducted the Operationalized Psychodynamic Diagnosis (OPD-2) Clinical Interview (Task Force, 2016). It is a semi-structured interview with specific interviewing tools for the exploration of each axis: I) "Module for the Evaluation of Domestic Violence OPD" proposed by the Chilean researcher Carla Crempien in 2009 in her PhD thesis (Crempien, 2009, 2012) and adapted to Brazil (Both et al. 2019), II) dysfunctional interpersonal pattern, III) intrapsychic conflicts, IV) structural functions (Task Force, 2016).

d) Data analysis

Python code was used as a base, which is available through the link https://www.geeksforgeeks.org/generating-word-cloud-python/. All prepositions and conjunctions were removed for the construction of the cloud.

III. Results

a) Study population

The sample had normal distribution ($p < 0.05$). The participants were 56 women aged 18-65 years (mean: 30, 07 years) who educational levels ranged from high school, income between 1 and 2 salaries. Table 1 presents the socio-demographic characteristics of the participants. The length of the marriages was in the range of 1-30 years, and 46, 4% were separated in less than 6 months (Table 2). Duration of violence is described in Table 3.

Table 1: Sociodemographic Data

Category	Subcategory	Women	Men
Age	18 to 20 years old	8 (14,3%)	3 (5,4%)
	21 to 25 years old	16 (28,6%)	5 (8,9%)
	26 to 30 years old	8 (14,3%)	16 (28,6%)
	31 to 35 years old	9 (16,1%)	13 (23,2%)
	36 to 40 years old	8 (14,3%)	4 (7,1%)
	41 to 45 years old	2 (3,6%)	5 (8,9%)
	46 to 50 years old	3 (5,4%)	5 (8,9%)
	51 to 55 years old	1 (1,8%)	1 (1,8%)
	56 to 60 years old	1 (1,8%)	2 (3,6%)
	61 to 65 years old	0	2 (3,6%)
Race	White	37 (66,1%)	35 (62,5%)
	Black	21 (21,4%)	13 (23,3%)
	Brown	6 (10,7%)	7 (12,5%)
	Indigenous	1 (1,8%)	1 (1,8%)
Scholarity	Illiterate	0	1 (1,8%)
	Incomplete elementary school	15 (26,8%)	17 (30,4%)
	Complete primary education	6 (10,7%)	6 (10,7%)
	Incomplete high school	8 (14,3%)	7 (12,5%)
	Complete high school	22 (39,3%)	22 (39,3%)
	Incomplete higher education	3 (5,4%)	1 (1,8%)
	Complete higher education	1 (1,8%)	2 (3,6%)
	Postgraduate studies	1 (1,8%)	0
Income	None	13 (23,2%)	8 (14,3%)
	Less than 1 salary	8 (14,3%)	1 (1,8%)
	Between 1 and 2 salaries	31 (55,4%)	35 (62,5%)
	Between 3 and 6 salaries	2 (3,6%)	5 (8,9%)
	Between 7 and 12 salaries	1 (1,8%)	2 (3,6%)
	More than 12 salaries	1 (1,8%)	4 (7,1%)
Religion	Godless	22 (39,3%)	26 (46,4%)
	Catholic	19 (33,9%)	15 (26,8%)
	Spititist	4 (7,1%)	3 (5,4%)
	Afro-Brazilian	3 (5,4%)	6 (10,7%)
	Evangelical	0	6 (10,7%)
Addiction	Alcohol	3 (5,4%)	25 (44,6%)
	Drug	2 (3,6%)	0
	Tobacco	8 (14,3%)	7 (12,5%)
	Marijuana	1 (1,8%)	7 (12,5%)

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	Cocaine	0	3 (5,4%)
	Marijuana and Cocaine	0	7 (12,5%)
	Anabolic	0	1 (1,8%)

Note. Income: 1 salary is a basic remuneration to the worker. Religion: Godless is the person who do not believe in God. Spiritism is the person who believe in life after death. Umbanda is the person who has several cults influenced by Indians.

Table 2: Relationship

Category	Subcategory	Women
Type of relationship	Date	1 (1,8%)
	Dating	9 (16,1%)
	Marriage	5 (8,9%)
	Stable union	8 (14,3%)
	Divorced	7 (12,5%)
	Separated in less than 6 months	26 (46,4%)
Time of relationship	Less than 6 months	3 (5,4%)
	Between 6 months and 1 year	6 (10,7%)
	Between 1 and 2 years	11 (19,6%)
	Between 3 and 5 years	13 (23,2%)
	Between 6 and 10 years	15 (26,8%)
	Between 11 and 15 years	2 (3,6)
	Between 16 and 20 years	4 (7,1%)
	Between 21 and 30 year	2 (3,6%)

Table 3: Duration of violence

Category	Frequency
< 6 months	18 (32,1%)
6-24 years	8 (14,3%)
2-5 years	14 (25%)
5-10 years	6 (10,7%)
> 10 years	10 (17,9%)

b) Word Cloud

Figure 1 shows the word cloud from the text classification tool.

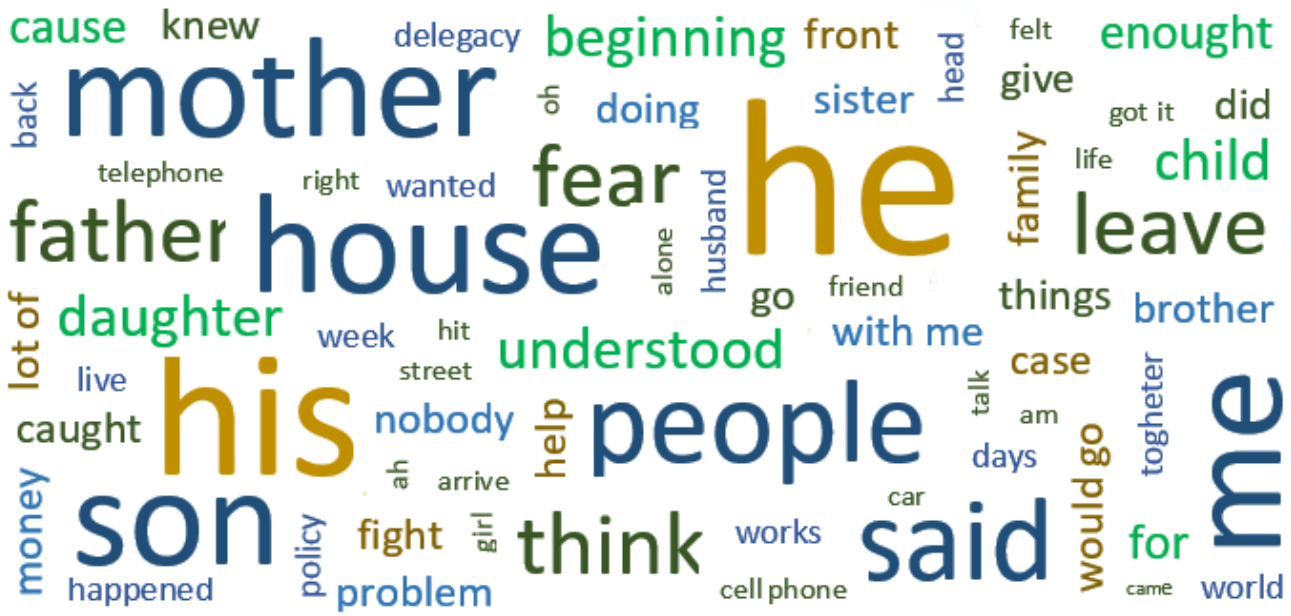

Figure 1: Word Cloud (n=56)

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IV. Discussion

According to Wild and collaborators (2018), evidence suggests that knowledge and skills rarely translate international guidelines and sustainable good practice. It is necessary to change support training and health leadership. For example, the National Action Plan on Gender-based Violence in Timor-Leste for training of trainers (SEM, 2017), WHO handbook for engaging health (WHO, 2017). Therefore, professionals and researchers need to understand the real needs during the reception and identification of women suffering from IPV.

The women's discourse in the interviews had focused on understanding what had really happened in their relationship, reporting their abusive situations. In this sense we highlight the words “problem”, “people” referring to the couple, “he”, “his”, what was said (“said”), the children involved (“son”, “daughter”, "child").

All women referred to the "beginning" of the relationship as different, whose husband was affectionate and caring, but over time this behavior changed. The husband had jealous and controlling behavior. This aspect is observed in the cycle of violence. Intimate partner violence tends to be systematic and chronic, the maltreatment goes through cycles in which violence episodes alternate with remorse and recompense; this has been described as the “cycle of violence”. IPV increases on severity along time (Walker, 2016).

In this sense, they concentrate part of the discourse reporting the cause (“cause”) of the violence. They attributed her husband's use of alcohol and drugs and her husband's jealousy that provoked aggression in his behavior. According to Zacan et al. (2013) and Crempien (2009) husband's drug use and jealousy is a relevant factor in IPV. This control is called psychological violence (Brasil, 2006). Women who suffered psychological violence reported significantly more controlling behaviors from their partners than non-victims. And from a clinical perspective, it has been reported its impact on women’s mental health, and its associations with depression, anxiety and posttraumatic stress disorder (García-Moreno, Jansen, Ellsberg, Heise, et al, 2006). The cause is also noted by the word “think” in the word cloud, in which participants tried to exploit partner violence.

Research suggested that social support is associated with less severe IPV (Schultz, Walls, & Grana, 2019, Crempien, 2012), specially with family (Wright, 2015).However, it is observed that the victim's speech was organized around the husband (words “he”, “his”, “father” of the children). Little said too much social relationships with friends or family. Another prevalent speech was the word "mother", but they referred in a negative sense, angry at early abandonment, lack of support. Also, companions limit them in relation to having a job, where they remain focused on raising children at home (Blanchard et al., 2018).

Studies point to the trangerationality of violence, whose father's perpetration of violence against the mother and child (Chiesa et al., 2018), with a co-occurrence rate of 75% (range 11–97%; Jouriles, McDonald, Slep, Heyman, & Garrido, 2008). There are many consequences for children exposed to IPV in mental and behavioral health (Johnson et al., 2002, Lapierre, 2010, Crempien, 2012).

Another word that stood out in the word cloud was the word "fear." The male perspective is characterized by abusive and coercive physical or non-physical conduct, with recognizable inequality of powers and play of forces. And regarding female behavior, there is the presence of fear with response of avoidance, adaptation and submission (Crempien, 2009; Blanchard et al., 2018). IPV presents with a slow and silent onset without physical aggression and gradually progresses to actions with greater intensity and humiliation (Leôncio et al., 2008). However, violence can be aggravated due to women's shame in reporting, lack of educational means and access to legal information and lack of assistance and protection (Signori, & Madureira, 2007). In this sense, it is necessary to combine effective assessment practices with preventive measures, such as psychoeducation and other screenings.

V. Text Classification Tools

In our previous reviews, the qualitative researches use content analysis about social and cultural issues (Hays & Emelianchik, 2009; Souto et al., 2019), program planners by thematic content analysis (coding and categorization for each interview question) in NVivo 10.0 (Blanchard et al., 2018), representations of domestic violence against women by software EVOC - Ensemble de Programmes Pemettant L´Analyse des Evocations (Silva et al., 2018; Gomes et al., 2015), describe the general violence situation by coding and recognizing themes or categories (Taherkhani et al., 2014), understand of pregnancy's experiences IPV by recognizing themes (Baird, Creedy, & Mitchell, 2017).

The aim of this study was to analyze the text classification with word cloud as a tool to understand the pattern of patient functioning, complementing the qualitative analysis. Thus, it was observed that it was possible to explore various questions of the participants using the word cloud.

VI. Implications for Clinical Practice and Public Healthy

According to a meta-analysis, there is an association between IPV and mental health problems (Bacchus, Ranganathan, Watts, Devries, 2018). The most important mental illnesses seen in women after

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domestic violence are post-traumatic stress disorder, anxiety disorder, and depression (Cengiz et al., 2014). High levels of IPV are associated with moderate suicide risks (Kavak et al., 2018).

During the reception of women, it is important to differentiate episodes of recent violence and violence that has occurred historically in women's lives, the duration and severity of IPV, risks of alcohol and other substance use, support network (Bacchus, Ranganathan, Watts, Devries, 2018). IPV is associated with a history of childhood trauma. Abusive experiences during childhood predispose victims to a higher risk of later revictimization. Thus, previous traumas resurface in current traumas that need to be elaborated and overcome dependence valuing their self-esteem (Sahin, Timur, Ergin, Taspinar, Balkaya, Cubukcu, 2010).

VII. Conclusion

This study was bold because it used text classification as a method of qualitative analysis. It was possible to understand the pattern of patient functioning from the text classification tool. Of particular importance to the population of this study, more research using word cloud to understand the mechanisms by which IPV may influence mental health.

A limitation of this study is its cross-sectional nature which impedes the establishment of temporal relations between the studied variables or the study of the self capacities, later to victims' reparation therapy and interdisciplinary interventions. Another limitation is the small sample size, where there are no subgroups to compare variables.

The risk for IPV and the ability to buffer effects of traumatic stressors on health outcomes is higher when the discourse of victim focuses only on the traumatic event. It is necessary to accommodate the patient's demand to understand the situation of violence, elaborate these issues and insert different interests (work, protection services, support network). Thus, it was possible to contribute to the enrichment of their difficulties and the treatment obstacles. Working through with the victim on these aspects, could lead to a more complete and realistic perception of herself and the others', as well as promoting her reflective function and affective regulation.

The violence or a consequence of it represents internal obstacles of the victim to regulate her emotional experience and stress. The treatment could contribute to the management in a differentiated way, diverse self capacities. Future research is recommendable to include a larger number of participants in order to go further in the study of these possible associations. Likewise, longitudinal studies are interesting to examine changes in self capacities during interventions.

VIII. Ethical Observations

1. *Conflicts of interest:* There are no conflicts of interest.
2. *Ethical Approval:* The work was approved by an institutional ethics committee and authorized to collect data at the corresponding institution.
3. *Consent:* The victims were invited voluntarily and authorized their participation in the research by signing the Term of Free and Informed Consent.
4. *Omission:* All data that could identify participants was omitted.

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