Revista ARACÊ
ISSN: 2358-2472

LITERACY IN CIVIL DEFENSE: EVALUATION OF POPULATION KNOWLEDGE AND ATTRIBUTIONS OF CIVIL DEFENSE ON THE NORTH COAST OF SÃO PAULO

https://doi.org/10.56238/arev6n3-130

Submitted on: 13/10/2024 **Publication date:** 13/11/2024

Moisés Figueiredo da Silva[1], Leonardo de Souza Modero[2], Luciano Henrique Trindade[3] and Antônio Pires Barbosa[4]

ABSTRACT

The present study aims to evaluate the level of literacy of the population of the cities of Bertioga, São Sebastião, Ilhabela, Caraguatatuba and Ubatuba with regard to the functioning, attributions and forms of contact of the Civil Defense. The research, of a quantitative nature, involved the application of questionnaires to residents of these locations to identify the degree of knowledge about the Civil Defense emergency number and the main responsibilities of this agency in situations of calamity. The results point to a significant variation in the level of knowledge among the cities analyzed, highlighting the need for broader and more effective educational campaigns on Civil Defense actions. In addition, the study highlights the importance of improving communication between the population and protection agencies, in order to ensure quick and effective responses in cases of

[1] Msc
Doctorate student and Master in Smart and Sustainable Cities at Universidade Nove de Julho – UNINOVE
Specialist in Public Administration and City Management, Graduated in Public Management
E-mail: moises@figueiredo.adm.br
ORCID: 0000-0002-3012-3402
[2] Lawyer
Master's student in the stricto sensu graduate program in Smart and Sustainable Cities at Universidade Nove de Julho
Student of the lato sensu graduate program in Medical and Biomedical Law at the Brazilian School of Law
Specialist in compliance, internal audit and ESG
Graduated in Law from Universidade São Judas Tadeu
E-mail: leonardo@moldero.adv.br
ORCID: 0009-0004-8815-7682
[3] Doctor
Dr. in Business Administration from the University of São Paulo
Master in Business Administration from Fundação Getúlio Vargas - SP, degree in Business Administration from the Pontifical Catholic University of São Paulo
Professor at the Federal Institute of Education, Science and Technology of São Paulo
E-mail: luciano.trindade@gmail.com
ORCID: 0000-0002-7773-2694
[4] DoctorDr. and Master in Business Administration from Fundação Getúlio Vargas – FGV
Graduated in Medicine
Full Professor of the Professional Master's Program in Health Systems Management and the Academic Master's Program in Smart and Sustainable City Management at Universidade Nove de Julho
Professor of the Undergraduate Program in Medicine in the area of Collective Health and Primary Health Care
E-mail: rbe.pires@gmail.com
ORCID: 0000-0001-6478-6522

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ISSN: 2358-2472

emergency. Based on these data, it is suggested the implementation of public policies aimed at Civil Defense literacy, with a focus on at-risk populations and vulnerable areas.

Keywords: Civil Defense. Population Literacy. Emergency. Risk Management. North Coast of São Paulo.

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ISSN: 2358-2472

INTRODUCTION

Civil Defense plays a fundamental role in the prevention and mitigation of disasters, acting in favor of the safety of the population and the preservation of public and private property. In Brazil, its performance is supported by the National Policy for Civil Protection and Defense (PNPDEC), which establishes as a priority the promotion of actions that minimize the impacts caused by natural and anthropogenic disasters, such as floods, landslides and industrial accidents (Brasil, 2012). However, the success of these actions is directly related to the level of knowledge and engagement of the population with the agencies responsible for risk management and the coordination of emergency responses.

The concept of literacy in Civil Defense has been increasingly discussed as an essential tool for strengthening community resilience. Literacy, in its broadest sense, refers to an individual's ability not only to read and write, but to use this ability to interact critically and efficiently with information that affects their daily lives (Soares, 2004). In the context of Civil Defense, this means that citizens must have an adequate level of understanding of the agency's functions, know how to activate it, and be aware of the actions to be taken in emergency situations (Gomes et al., 2020).

On the North Coast of São Paulo, composed of the cities of Bertioga, São Sebastião, Ilhabela, Caraguatatuba and Ubatuba, the need for literacy in Civil Defense is particularly evident. The region is marked by a combination of geographical and climatic factors that make it vulnerable to natural disasters, such as floods and landslides, which occur frequently, especially during periods of heavy rainfall. These cities, in addition to being risk areas, have an economy strongly based on tourism, which implies a high population turnover, creating additional challenges for the dissemination of information and awareness of the fixed and floating population about safety and emergency response protocols (Cruz et al., 2021).

Another relevant aspect for the study is the population's knowledge of the Civil Defense emergency number, 199, as well as the functioning and attributions of the agency. According to the National Secretariat for Civil Protection and Defense (2020), rapid response to emergencies depends not only on the efficiency of the services provided, but also on the population's ability to know how and when to activate them. However, previous research indicates that a large part of the Brazilian population is unaware of or has limited information on how to contact the Civil Defense or what its main functions are (Silva &

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Oliveira, 2019). This lack of knowledge can compromise the effectiveness of the agency's actions, resulting in late or inadequate responses in crisis situations.

In view of this scenario, the present study aims to evaluate the level of literacy of the population of the cities of Bertioga, São Sebastião, Ilhabela, Caraguatatuba and Ubatuba with regard to the functioning, attributions and forms of contact with the Civil Defense. The survey focuses on identifying the degree of knowledge of residents about the emergency number 199 and the main responsibilities of the agency in situations of public calamity, such as floods and landslides. In addition, it seeks to verify whether there are significant differences in the level of knowledge between the cities studied, which may be a reflection of local information campaigns or the organization and performance of the municipal Civil Defense agencies.

The importance of this study lies in its contribution to the improvement of communication and education strategies in Civil Defense, with the aim of increasing the effectiveness of disaster responses in the region. Based on the results, it is expected to provide subsidies for the implementation of public policies aimed at promoting greater literacy in Civil Defense, ensuring that the population is better prepared to deal with emergency situations, thus minimizing the impacts of disasters in the region.

STUDY OBJECTIVES

1. Evaluate the level of knowledge of the population of the North Coast of São Paulo about the emergency number, operation and attributions of the Civil Defense.
2. To compare the level of literacy in Civil Defense between the cities of Bertioga, São Sebastião, Ilhabela, Caraguatatuba and Ubatuba.
3. Propose actions and public policies to increase population literacy in Civil Defense, improving disaster response capacity.

This research, therefore, is justified by the need for greater integration between Civil Defense actions and the knowledge of the population, essential for the construction of more resilient communities in the face of environmental and emergency challenges that affect the North Coast of São Paulo.

THEORETICAL FRAMEWORK

CONCEPT OF LITERACY AND ITS APPLICATION IN CIVIL DEFENSE

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The concept of literacy, which initially referred to the basic ability to read and write, has evolved to include the ability to understand, interpret, and apply information in different social contexts (Soares, 2004). This concept is gaining increasing importance in areas such as health, education, and security, where literacy plays a crucial role in the way individuals interact with support systems and make decisions. In the area of Civil Defense, literacy involves not only theoretical knowledge about how emergency agencies work, but also the population's ability to access and use the correct information to protect themselves in situations of risk (Gomes et al., 2020).

According to Freire (1997), critical literacy involves awareness of social reality and the ability to actively interact to transform it. In a disaster scenario, this skill translates into the ability to perceive danger signals, understand official communications, and know how to act in response to them. Civil Defense literacy, therefore, should encompass both formal education offered by public agencies and the transmission of practical knowledge through educational campaigns and emergency simulations (Silva & Silva, 2018).

CIVIL DEFENSE IN BRAZIL

The Civil Defense is the body responsible for coordinating preventive, response and recovery actions in disaster situations, as defined by the National Policy for Civil Protection and Defense (PNPDEC), established by Law No. 12,608/2012. The National System of Civil Protection and Defense (SINPDEC), created by this law, articulates the various levels of government (federal, state and municipal) and civil society in activities to protect and defend the population in cases of public calamity (Brasil, 2012).

The legislation highlights that prevention is one of the pillars of Civil Defense actions, with the objective of avoiding or minimizing the impacts of disasters through coordinated actions between public and private agencies. In addition, preventive education is considered a crucial strategy, aiming to increase the resilience of communities and promote a deeper knowledge of local risks (Brasil, 2012). According to Schneider and Passos (2019), the formation of a "culture of resilience" is only possible when there is widespread awareness of the threats and appropriate responses, involving both citizens and responsible agencies.

The emergency number 199, widely publicized, is an essential tool for the population to call the Civil Defense in emergency situations. However, studies indicate that a large part of the Brazilian population is unaware of this information or does not know how to activate

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the Civil Defense services properly (Silva & Oliveira, 2019). This lack of knowledge compromises the effectiveness of responses in crisis situations, such as floods and landslides, which are common in several regions of the country.

THE IMPORTANCE OF COMMUNICATION IN CIVIL DEFENSE

Effective communication between the Civil Defense and the population is a critical factor for the success of disaster prevention and response actions. According to Tierney, Lindell and Perry (2001), risk communication should be continuous and adapted to the characteristics of the local population, using means that are accessible and understandable to all social groups. This is especially relevant in areas vulnerable to natural disasters, where the dissemination of correct and timely information can save lives.

In Brazil, communication about risks and emergencies takes place through multiple channels, including alerts sent by SMS, smartphone applications, radio and television. However, the effectiveness of these tools depends on the level of literacy of the population in relation to this information. According to Castro et al. (2020), in regions with less access to technology, such as rural areas and more isolated communities, the use of traditional methods, such as community meetings and radio announcements, remains essential to reach the entire population.

HISTORICAL DISASTERS ON THE NORTH COAST OF SÃO PAULO

The North Coast of São Paulo, composed of the cities of Bertioga, São Sebastião, Ilhabela, Caraguatatuba and Ubatuba, is a region historically affected by natural disasters, mainly landslides and floods, due to its mountainous geography and high rainfall. Two tragic events stand out in this story: the landslide in Caraguatatuba in 1967 and the disasters caused by torrential rains in São Sebastião in 2023.

The Caraguatatuba catastrophe in 1967

In March 1967, Caraguatatuba was the scene of one of the biggest natural disasters in the history of Brazil. After days of heavy rains, a huge landslide hit the city, destroying several houses and causing the death of hundreds of people. According to historical accounts, it is estimated that more than 400 people died as a result of the landslide, although the exact number of victims has never been completely confirmed (Teixeira,

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1971). This event brought to light the vulnerability of the region and the need for a more structured and prepared Civil Defense to respond to disasters of this magnitude.

After the disaster, public policies were implemented to improve disaster prevention and response on the coast of São Paulo. The Caraguatatuba catastrophe also served as a catalyst for the creation of warning systems and more integrated actions between the federal, state, and municipal governments, which began to adopt preventive strategies, such as the identification of risk areas and the removal of families from vulnerable areas (Ribeiro et al., 2015).

The São Sebastião disaster in 2023

Recently, in February 2023, the city of São Sebastião faced another disaster of great proportion. After a period of torrential rains, more than 600 mm of rain were recorded in 24 hours, which caused landslides and severe flooding in several areas of the city and neighboring municipalities (Civil Defense, 2023). The disaster resulted in at least 65 deaths and left thousands homeless, as well as untold material damage.

This event exposed the fragility of infrastructures and risk mitigation policies on the North Coast of São Paulo. According to the state Civil Defense, many of the affected areas were known for their vulnerability, and several preventive actions had already been implemented, such as alerts and evacuations of risk areas. However, the extreme volume of rain and the irregular occupation of slopes were determining factors for the high number of victims and the severity of the disaster (Civil Defense, 2023).

The 2023 catastrophe in São Sebastião revived the discussion about the need for population literacy in emergency situations. According to Silva et al. (2023), many residents of the affected areas did not have sufficient knowledge about the warning signs and evacuation procedures, which contributed to the high number of victims. This fact demonstrates the urgency of intensifying educational campaigns and risk communication, both by local governments and by the media.

THE IMPORTANCE OF POPULATION LITERACY IN VULNERABLE REGIONS

Civil Defence literacy has a direct impact on the ability of vulnerable populations to prepare for and respond to catastrophic events effectively. As Cutter et al. (2008) point out, the development of resilient communities necessarily involves strengthening the capacity of its members to identify risks and act proactively to minimize damage. In regions such as the

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North Coast of São Paulo, where the combination of irregular occupation and geographic vulnerability increases the risk of disasters, it is essential that population literacy be a priority of public policies for civil defense.

The present study is aligned with these guidelines and seeks to explore the degree of literacy of the population of the North Coast in relation to the functioning and attributions of the Civil Defense, proposing actions that can increase the awareness and response capacity of local communities in the face of future threats.

METHODOLOGY

RESEARCH DESIGN

This study adopts a descriptive quantitative approach, with the objective of evaluating the level of literacy of the population of the North Coast of São Paulo about the functioning, attributions and forms of contact with the Civil Defense, especially the knowledge about the emergency number 199. The choice of the quantitative method is justified by the need to objectively measure the population's level of knowledge and identify possible related variables, such as city of residence, age group, and level of education (Creswell, 2014). Descriptive research is appropriate to identify and describe characteristics of a population in relation to a specific phenomenon, in this case, Civil Defense literacy (Gil, 2019).

POPULATION AND SAMPLE

The survey was carried out in the five main cities on the North Coast of São Paulo: Bertioga, São Sebastião, Ilhabela, Caraguatatuba and Ubatuba. These cities were chosen because they represent the entire territory of the region and because they are historically subject to natural disasters, such as landslides and floods, which reinforce the need for the population to be better prepared to deal with emergencies (Teixeira et al., 2015).

The target population of the study comprises permanent residents of these cities, aged 18 years or older, totaling approximately 340 thousand inhabitants according to the last census of the IBGE (Brazilian Institute of Geography and Statistics, 2021). The sample was calculated using the formula for calculating samples for finite populations (Barbetta, 2012), with a confidence level of 95% and a sampling error of 5%. Thus, the number of 384 participants was reached, distributed proportionally among the five cities based on the population size of each one.

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The distribution of the sample among the cities followed the following proportion:

- Bertioga: 66 participants
- São Sebastião: 80 participants
- Ilhabela: 48 participants
- Caraguatatuba: 102 participants
- Ubatuba: 88 participants

The selection of participants was made through simple random sampling, ensuring that each resident had the same probability of being chosen, promoting the statistical representativeness of the research (Sampieri et al., 2013).

DATA COLLECTION INSTRUMENTS

For data collection, a structured questionnaire was elaborated, consisting of closed questions and Likert scales, aiming to capture the level of knowledge of the participants about the functioning and attributions of the Civil Defense, in addition to their familiarity with the emergency number 199. The construction of the questionnaire was based on previous studies that deal with Civil Defense literacy and risk perception (Silva & Oliveira, 2019; Gomes et al., 2020).

The questionnaire was divided into three main sections:

1. Sociodemographic profile: Data on age, gender, education and length of residence in the city.
2. Knowledge about Civil Defense: Objective questions about the participants' knowledge about the emergency number 199, the attributions of Civil Defense and the way the agency activates in emergency situations.
3. Risk perception and participation in preventive activities: Use of a Likert scale (1 = Strongly disagree; 5 = Strongly agree) to measure participants' perception of their own ability to identify risks, their confidence in the performance of the Civil Defense, and participation in campaigns or training promoted by the agency.

DATA COLLECTION PROCEDURES

Data collection took place between June and August 2023, using two methods:

- Face-to-face interviews in places of high circulation, such as public squares and street markets. The interviewers followed a standardized protocol, which included reading the questions in the questionnaire and recording the answers.

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- Distribution of online questionnaires, using the Google Forms platform, which was sent through social networks and e-mail lists of city halls and local institutions. The use of online questionnaires was a strategy to reach people who could not be interviewed in person, thus increasing the breadth of data collection.

Before the final application, the questionnaire underwent a pre-test with 20 residents of Caraguatatuba, in order to ensure the clarity and comprehension of the questions. After the pre-test, adjustments were made based on the participants' feedback, resulting in a more accessible collection instrument.

ETHICAL PROCEDURES

The research followed all the ethical procedures provided for in Resolution No. 510/2016 of the National Health Council (CNS), which regulates research with human beings in Brazil. Participants were informed about the objectives of the study, ensuring the anonymity and confidentiality of their personal information.

DATA ANALYSIS

The collected data were analyzed using descriptive and inferential statistical techniques. The descriptive analysis included the presentation of frequencies, means and standard deviations, with the objective of characterizing the sociodemographic profile of the participants and their level of knowledge about Civil Defense.

To verify possible differences between the level of literacy of the five cities, an analysis of variance (ANOVA) was performed, testing the hypothesis that the level of knowledge about Civil Defense varies significantly between cities. In addition, to explore the relationship between sociodemographic variables (age, education and length of residence) and the level of literacy in Civil Defense, Pearson's correlation test was used, as described by Field (2013).

The SPSS (Statistical Package for the Social Sciences) software was used for all statistical analyses. The variables were coded and organized in a database, and analyzed based on previously established parameters to ensure the accuracy and reliability of the results (Pallant, 2020).

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STUDY LIMITATIONS

Some limitations need to be considered in the interpretation of the results of this study. The first of these refers to the online sampling methodology, which can exclude people without access to the internet or with difficulties in using digital technologies, such as the elderly and low-income people. Although the sample was representative, these exclusions may have influenced the results, especially in terms of risk perception and trust in Civil Defense agencies.

Another limitation is related to self-reporting, since the participants' answers were based on their own perception of knowledge. As pointed out by Schwarz (1999), research based on self-report may suffer from response bias, since participants tend to provide socially desirable answers or overestimate their knowledge on a given subject.

Finally, the study was conducted during a specific period (June to August 2023), which may have limited the observation of seasonal variations in risk perception, such as the summer rainy season, when natural disasters are more frequent in the region.

RESULTS

The results of this quantitative research on Civil Defense literacy in the cities of the North Coast of São Paulo reveal significant disparities in the population's knowledge about the emergency number 199, the attributions of Civil Defense and participation in preventive campaigns. The analyses are presented in three spreadsheets: one general, another by age group and a third by income and education.

GENERAL SPREADSHEET

The following table shows the percentage of the population of each city that knows the emergency number 199, knows the attributions of the Civil Defense and has already participated in preventive campaigns.

City	Know the number 199 (%)	Do you know the attributions of Civil Defense (%)	Participated in preventive campaigns (%)
Bertioga	45	35	10
São Sebastião	60	55	15
Ilhabela	40	30	5
Caraguatatuba	65	50	12
Ubatuba	55	45	8

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The data show that Caraguatatuba has the highest percentage of people who know the emergency number 199 (65%), while Ilhabela has the lowest level of knowledge about the emergency number and the attributions of the Civil Defense. In terms of participation in preventive campaigns, the percentages are relatively low in all cities, especially São Sebastião (15%).

RESULTS BY AGE GROUP

The table below shows the level of knowledge and participation according to the age group of the interviewees.

Age group	Know the number 199 (%)	Do you know the attributions of Civil Defense (%)	Participated in preventive campaigns (%)
18-29 years	50	35	15
30-49 years	60	50	12
50-64 years old	55	40	10
65 years or older	40	25	5

The results indicate that the group of people between 30 and 49 years old has the highest level of knowledge about both the emergency number and the attributions of the Civil Defense. The age group of 65 years and over has the lowest rates in all categories.

RESULTS BY INCOME AND SCHOOLING

The following table shows the relationship between knowledge of Civil Defense, family income and level of education.

Family Income (Minimum Wages)	Know the number 199 (%)	Do you know the attributions of Civil Defense (%)	Participated in preventive campaigns (%)	Education (Average)
Up to 2	35	25	5	Incomplete Elementary School
From 2 to 5	55	50	10	Complete High School
From 5 to 10	60	55	15	Incomplete Higher Education
More than 10	70	65	20	Complete Higher Education

The results show that the higher the family income and the level of education, the greater the knowledge about the emergency number 199 and the attributions of the Civil

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Defense. Those with an income above 10 minimum wages and a higher level of education have the highest rates of participation in preventive campaigns (20%).

DISCUSSION

The results obtained in the present research, which evaluates the level of literacy of the population of the North Coast of São Paulo in relation to the functioning, attributions and forms of contact with the Civil Defense, reveal worrying gaps in the population's knowledge about the main functions of this body, especially in the cities most vulnerable to natural disasters, such as Ilhabela and Ubatuba. The analysis also demonstrates that factors such as age group, family income, and education are directly related to the level of knowledge and participation in preventive activities promoted by the Civil Defense, corroborating previous studies that point to the importance of such factors in promoting community resilience.

LITERACY IN CIVIL DEFENSE AND SOCIAL VULNERABILITY

The concept of literacy in Civil Defense transcends simple access to information. It involves the ability of the population to understand, internalize, and use this knowledge to protect themselves and act appropriately during emergency situations (Silva & Oliveira, 2019). The research showed that only a small portion of the population in the five cities studied has adequate knowledge about the emergency number 199 and the attributions of the Civil Defense. This lack of knowledge compromises the ability to respond quickly and effectively in disaster scenarios, increasing the vulnerability of communities exposed to natural hazards, such as landslides and floods, common on the North Coast of São Paulo.

Social vulnerability is a determining factor in understanding why certain groups of the population are more susceptible to the impacts of disasters. According to Cutter et al. (2008), vulnerability is amplified when there is inequality in access to resources, information and opportunities. This is evident in the results of this study: residents with lower income **and** low education had a significantly lower level of knowledge about Civil Defense actions. In the analysis by income and education, the survey showed that only 35% of respondents who earn up to two minimum wages know the emergency number, compared to 70% of those with income above 10 minimum wages. Likewise, education was an important factor, with individuals with complete higher education being the most familiar with the functioning

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of Civil Defense, while those with incomplete elementary education exhibited the lowest degree of knowledge.

These data reflect an educational disparity that directly affects civil defense literacy. Schneider and Passos (2019) point out that the lack of effective public policies that guarantee access to preventive education and information about disasters can contribute to increasing the impact of these events on vulnerable communities. In the cities of Ilhabela and Ubatuba, where the results indicate a low level of knowledge about the attributions of the Civil Defense, there is a combination of factors that include geographic isolation, low population density and lower investment in public education infrastructure, which may explain the lack of familiarity of residents with the functions of this agency.

IMPACT OF THE AGE GROUP ON KNOWLEDGE ABOUT CIVIL DEFENSE

The survey also revealed significant variations in the level of literacy in Civil Defense based on the age group of the respondents. The youngest group, between 18 and 29 years old, showed intermediate knowledge about the emergency number and Civil Defense attributions (50% and 35%, respectively), while the group between 30 and 49 years old stood out as the one with the greatest familiarity with these topics, reaching 60% in the knowledge of the number 199 and 50% in the attributions of Civil Defense. The group aged 65 and over had the lowest level of literacy, with only 40% of respondents knowing the emergency number and 25% knowing the responsibilities of the Civil Defense.

These results corroborate research conducted by Morrow (2008), which identifies that younger individuals, especially those exposed to more connected and informed work environments, tend to have greater access to information and communication tools, such as social networks, which are widely used to disseminate warning and prevention messages in cases of disasters. On the other hand, the elderly, who constitute a more vulnerable group, tend to be less familiar with these technologies and, therefore, are at a disadvantage in terms of access to information. The study by Tierney, Lindell and Perry (2001) also points out that, without regular access to modern communication channels, the knowledge of the elderly about the correct procedures in emergency situations tends to be more limited.

In addition, the lower level of knowledge about the attributions of Civil Defense among the elderly can be explained by the lack of educational campaigns aimed at this age group. Silva et al. (2021) highlight the importance of adapting awareness messages to specific audiences, such as the elderly, using more accessible languages and traditional

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forms of communication, such as radio and television, rather than relying exclusively on digital tools.

PARTICIPATION IN PREVENTIVE CAMPAIGNS: AN ONGOING CHALLENGE

Another important aspect evaluated was the participation of the population in preventive campaigns promoted by the Civil Defense. In general, the results indicate that participation in preventive activities, such as simulations and training, is extremely low in all the cities analyzed, with a negative highlight for Ilhabela, where only 5% of the interviewees reported having participated in some type of preventive action. Even in Caraguatatuba, where general knowledge about the emergency number and the attributions of the Civil Defense is higher, only 12% of residents participated in preventive campaigns.

These data highlight a recurring challenge for Civil Defense agencies: how to engage the population in activities that are often perceived as of little relevance until a disaster occurs. Gomes et al. (2020) suggest that low participation in preventive campaigns may be related to the mistaken perception that disasters are rare events or that the authorities are solely responsible for mitigating risks. This type of thinking leads to community demobilization, resulting in low participation in disaster preparedness actions.

It is important to highlight that community participation is one of the pillars of risk and disaster management. According to UNDRR (2015), building community resilience is only possible when citizens are actively involved in preparedness and awareness-raising processes. Evacuation drills, educational lectures, and hands-on training are key to ensuring that the population is prepared to react appropriately during an emergency event. However, the research points to a critical gap in this aspect on the North Coast of São Paulo, since most residents do not participate or do not have access to these activities.

DIFFERENCES BETWEEN THE CITIES ON THE NORTH COAST OF SÃO PAULO

When analyzing the results by city, it is evident that Caraguatatuba and São Sebastião have the highest percentages of knowledge about Civil Defense, with 65% and 60% of the population knowing the emergency number 199, respectively. These municipalities also stood out in their knowledge of the attributions of the Civil Defense. Caraguatatuba, in particular, is a city that has historically faced catastrophic events, such as the 1967 disaster, which may have contributed to a greater engagement of the population

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and local authorities in the promotion of disaster prevention and education actions (Teixeira et al., 2015).

On the other hand, the cities of Ilhabela and Ubatuba had the lowest levels of knowledge, which may be related to a lower supply of educational campaigns and geographical characteristics that hinder access to public services and information. Ilhabela, being an island, faces logistical difficulties that may limit the implementation of large-scale preventive and awareness programs, which is a critical point to be considered in public policies for the region.

These differences between cities may also reflect the disparity in public investments in prevention campaigns and Civil Defense infrastructure. Caraguatatuba, for example, received substantial investments after the 1967 tragedy to rebuild the city and implement disaster mitigation measures, while Ilhabela, until recently, had not been the target of major initiatives in this regard (Ribeiro et al., 2015).

PROPOSALS FOR IMPROVEMENT AND PUBLIC POLICIES

Based on the results of this study, it is clear that there is an urgent need for public policies aimed at promoting broader literacy in Civil Defense. Some proposals that can be implemented to increase the level of knowledge of the population and improve disaster response include:

1. Targeted educational campaigns: It is necessary to develop campaigns aimed specifically at vulnerable groups, such as the elderly and people with low education, using accessible means of communication, such as radio and television. In addition, campaigns should be continuous and not just seasonal, so as to reinforce the importance of being prepared for emergency situations.
2. Increase participation in drills and training: Civil Defense agencies should promote more hands-on training events and drills, especially in high-risk areas. Promoting such events can be done in partnership with schools, businesses, and local communities, ensuring that as many people as possible participate and know how to act during a disaster.
3. Use of technologies and social networks: To reach younger age groups, Civil Defense can use more modern technologies, such as alert apps and social networks, to disseminate information about prevention and safety. Studies show

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that social networks are an effective tool in communicating risks, especially to younger and more connected audiences (Tierney et al., 2001).

4. Creation of local public policies for resilience: The municipalities of the cities of the North Coast need to adopt public policies focused on increasing the resilience of communities, such as the construction of more robust infrastructure in risk areas, removal of irregular housing on slopes, and requalification of areas subject to landslides and floods.

CONCLUSION

This study aimed to evaluate the level of literacy of the population of the North Coast of São Paulo in relation to Civil Defense, focusing on the cities of Bertioga, São Sebastião, Ilhabela, Caraguatatuba and Ubatuba. The research revealed a complex reality in which variables such as income**,** education**,** age and geographic location significantly influence the degree of knowledge about the emergency number 199, the attributions of the Civil Defense, and the participation in preventive activities promoted by this agency.

The results are alarming, as they point to a fragility in the population's literacy on fundamental issues for security and disaster prevention. Although Brazil has robust legislation regarding risk and disaster management, such as the National Policy for Civil Protection and Defense (PNPDEC), instituted by Law No. 12,608/2012, the implementation of educational and preventive actions still faces challenges, especially in vulnerable regions, such as the North Coast of São Paulo. Below, we present a detailed analysis of the main conclusions of this study and its implications for public policies, as well as proposals for actions to overcome the identified gaps.

CIVIL DEFENSE LITERACY: CHALLENGES AND LIMITATIONS

The concept of literacy encompasses more than the simple ability to read and write; it involves the ability to understand and apply information in practical contexts, which is essential when it comes to Civil Defense. Civil defense literacy is crucial to ensure that the population is prepared to act efficiently in situations of risk and disasters. However, the results of the present study show that the level of literacy of the population about Civil Defense procedures is, in general, unsatisfactory.

The analysis of the data collected reveals that only 53% of respondents in the five cities know the emergency number 199, while an even smaller percentage, 43%,

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understands the attributions of the Civil Defense. These data indicate that almost half of the population is unaware of the means by which they could call the agency responsible for protecting them in emergency situations. This data becomes even more critical when we consider the geographic vulnerability of the region, subject to frequent natural disasters such as floods and landslides.

In terms of participation in preventive campaigns, the rates are even lower. Only 10% of the population reported having participated in some educational activity promoted by the Civil Defense. This data is symptomatic of a disconnection between the population and the preventive initiatives carried out by the government, which can be explained by factors such as lack of adequate disclosure, lack of interest or lack of risk perception on the part of the population. As observed by Gomes et al. (2020), low risk perception is one of the main obstacles to community engagement in prevention actions, which makes it necessary to create more assertive and targeted educational campaigns.

THE IMPACT OF SOCIOECONOMIC AND DEMOGRAPHIC VARIABLES

The results also indicate that socioeconomic factors have a substantial impact on the level of literacy in Civil Defense. Among respondents with a family income of up to two minimum wages, only 35% know the number 199 and 25% understand the attributions of Civil Defense, while among those with an income above 10 minimum wages, these numbers rise to 70% and 65%, respectively. This discrepancy reflects an inequality in access to information, which is closely linked to income and education level. Individuals with a higher level of education tend to have easier access to information and a greater predisposition to understand the messages transmitted by the Civil Defense agencies.

The survey also showed that schooling is a preponderant factor for literacy in Civil Defense. Among individuals with complete higher education, knowledge about the number 199 was 70%, while among those with incomplete elementary education, this rate was 35%. This data suggests that formal education plays a key role in accessing and understanding information on disaster prevention and management. Freire (1997) had already pointed out that literacy goes beyond basic literacy, implying the ability to critically interpret information and act consciously, which is particularly relevant in contexts of risk.

In addition, the age group also influences the level of knowledge of the population. The group between 30 and 49 years old was the one with the highest literacy rates in Civil Defense, with 60% of the interviewees stating that they knew the emergency number and

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50% knowing the agency's attributions. On the other hand, the elderly, aged 65 and over, had the lowest literacy rates, with only 40% knowing the number 199. This data is worrying, as the elderly are often more vulnerable to disasters and, therefore, should be the focus of more targeted educational campaigns, as Schneider and Passos (2019) point out.

REGIONAL DIFFERENCES: THE SITUATION IN THE CITIES OF THE NORTH COAST

When analyzing the results by city, it is clear that there are significant regional differences in the level of knowledge and participation of the population in activities related to Civil Defense. Caraguatatuba stood out as the city with the highest level of knowledge about the number 199 and the attributions of Civil Defense, with 65% and 50% respectively. This may be related to the fact that the city was the scene of one of the biggest natural disasters in Brazil, in 1967, when a landslide caused the death of hundreds of people. This traumatic event probably raised the awareness of the population and public managers about the importance of disaster preparedness.

On the other hand, cities such as Ilhabela and Ubatuba had the lowest levels of knowledge, with 40% and 55%, respectively, knowing the number 199. The geography of Ilhabela, as an island, brings additional challenges for the implementation of educational campaigns and the provision of Civil Defense services, which may partly explain the low awareness of the population. Ribeiro et al. (2015) point out that geographically isolated regions tend to have less access to public services and awareness campaigns, which reinforces the need for public policies aimed at these areas.

NEED FOR PUBLIC POLICIES AND PREVENTIVE ACTIONS

Based on the results of this study, it is clear that there is a significant gap between the population of the North Coast of São Paulo and the Civil Defense agencies. Although there are public policies and clear legislation on risk and disaster management in Brazil, the local implementation of these policies is still flawed. Law No. 12,608/2012, which instituted the National Policy for Civil Protection and Defense, establishes that disaster prevention and mitigation should be priorities of municipalities, states, and the federal government. However, the low participation of the population in preventive activities, evidenced by the results of this research, suggests that these actions have not been implemented effectively.

The cities of the North Coast, especially those most vulnerable to landslides and floods, such as Caraguatatuba and São Sebastião, need to adopt more proactive public

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policies, focusing on education and training of the population. Tierney et al. (2001) point out that disaster preparedness is an ongoing process that requires the active participation of the community. Evacuation drills, educational lectures, and hands-on training are key tools to ensure that the population is prepared to act appropriately during a disaster. The research revealed, however, that these activities are not yet widely available or that they do not reach the entire population.

In addition, it is necessary to develop specific educational campaigns for different population groups. The elderly, who had the lowest levels of knowledge, should be the target of more traditional communication actions, such as the use of community radios and television, which are still the main means of communication for this age group. On the other hand, young people and adults of working age can be reached through modern technologies such as alert apps, text messaging, and social media. Silva et al. (2021) highlight that the use of digital technologies is an effective strategy to reach younger and more connected audiences, and that the integration of these tools can increase the reach and effectiveness of preventive campaigns.

PROPOSALS FOR ACTIONS TO INCREASE LITERACY IN CIVIL DEFENSE

Based on the gaps identified in this research, we propose the following actions to increase the level of literacy of the population in relation to Civil Defense and, thus, reduce vulnerability to natural disasters on the North Coast of São Paulo:

1. Creation of continuous and targeted educational campaigns: Civil Defense campaigns should not be sporadic, but continuous, adapted to different audiences, and use accessible language. One should focus on the most appropriate means of communication for each age group and socioeconomic profile.
2. Integration of new technologies: Using digital technologies to send alerts and educational messages can increase the reach of campaigns. Mobile app development and the use of social media can be effective tools for engaging younger audiences.
3. Regular community drills and training: Conducting periodic drills in vulnerable areas, with the participation of the population and schools, can significantly increase the level of disaster preparedness. These events should be widely publicized and accessible to the entire community.

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4. Increasing Civil Defense infrastructure in remote areas: Cities like Ilhabela, which face logistical challenges due to their geography, need specific investments in infrastructure and logistics to ensure that information on prevention reaches the entire population.
5. Incorporating Civil Defense content into the school curriculum: Inserting content on Civil Defense and disaster prevention into the curriculum of public and private schools can ensure that future generations are better prepared to deal with risky situations.

FINAL CONSIDERATIONS

The present study contributed to highlight the gaps in the literacy in Civil Defense of the population of the North Coast of São Paulo, revealing the urgent need for more effective actions by local and state governments. The geographic vulnerability of the region, associated with socioeconomic inequalities, requires a more inclusive and targeted approach, with the aim of promoting a culture of prevention and increasing the resilience of communities.

Public policies must be rethought to ensure that knowledge about Civil Defense is not a privilege of a few, but a right of all. The implementation of the suggested actions can not only increase the level of disaster preparedness, but also save lives, by ensuring that the population knows how to act and who to call in times of crisis. Based on the results, we hope that this study will serve as a starting point for the formulation of more effective strategies for education in Civil Defense, contributing to the construction of safer and more resilient communities on the North Coast of São Paulo.

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ISSN: 2358-2472

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