

Environmental perception, pro-environmental behaviours and quality of life of residents of Perequê Beach

Avaliação de percepção ambiental, comportamentos pró-ecológicos e qualidade de vida de moradores da Praia do Perequê

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ABSTRACT

Praia do Perequê is located in the city of Guarujá (SP) and presents a situation of severe socio-environmental impacts directly linked to tourism and navigation activities. This research aimed to assess environmental perception, pro-environmental behaviours and quality of life of the *caiçara* community living in this region. Adult and elderly residents of Perequê Beach responded to the Environmental Perception Questionnaire – Beach; Ecological Behaviour Scale, WHOQOL-bref and Brazil Economic Classification Criteria in public places. Results indicated elements of positive environmental perception interacting with socioeconomic difficulties perception (in transportation and public health care), waste disposal behaviours carried out by residents and problems in the environmental domain of quality of life. This initiative will guide the actions to be undertaken by the municipal management of Guarujá.

Keywords: Environmental perception. Pro-environmental behaviours. Quality of life. Caiçara. Baixada Santista.

RESUMO

A Praia do Perequê fica situada na cidade de Guarujá (SP) e apresenta uma situação de graves impactos socioambientais ligados diretamente às atividades de turismo e navegação. O objetivo da pesquisa foi avaliar percepção ambiental, comportamentos pró-ecológicos e qualidade de vida da comunidade de caiçaras daquela região. Moradores adultos e idosos da Praia do Perequê responderam ao Questionário de Percepção Ambiental – Praia; Escala de Comportamento Ecológico, WHOQOL-bref e Critério de Classificação Econômica Brasil, em locais públicos. Resultados indicaram elementos de percepção ambiental positiva interagindo com percepção das dificuldades (em transporte e atendimento em saúde pública), comportamentos dos moradores em relação ao descarte de lixo e problemas no domínio ambiental da qualidade de vida. Essa iniciativa permitirá a orientação de ações a serem empreendidas pela gestão municipal de Guarujá.

Palavras-chave: Percepção ambiental. Comportamentos pró-ecológicos. Qualidade de vida. Caiçara. Baixada Santista.

1 INTRODUCTION

Coastal zones, using several ecosystem services, such as fishing, concentrate a large part of the world's population. These high urbanisation levels along the coast may cause damages to marine ecosystems, potentially leading to socio-environmental conflicts linked to the loss of essential ecosystem services. According to the National Environmental Policy in Brazil (Brasil, 1981), local, regional or national public authorities must implement monitoring assessments and remediation strategies for impacted areas. Measures adopted by such decision-makers should simultaneously mediate conflicts, ensure the conservation of natural resources, the improvement and recovery of environmental quality, seeking to ensure conditions for socioeconomic development, the interests of national security and the protection of human life. Socio-environmental impacts are related to the effects that human activities may pose on the natural environments and human communities. Indeed, this term has been used to describe both positive and negative impacts resulting from people, organisations or projects on the environment and society (International Association for Impact Assessment, 1994). Socio-environmental impacts may also include ecosystem change and pollution leading to biodiversity loss, as well as social damages such as community displacement, social inequalities and job losses.

Perequê Beach, located east of Guarujá City, in the state of São Paulo (Figure 1), is under serious socio-environmental impacts directly linked to tourism and navigation activities (Castro; Perina; Fillmann, 2012; Castro; Westphal; Fillmann, 2011). Such a situation can be mediated through interventions by public authorities, which, in turn, require precise assessments to guide the actions to be undertaken.

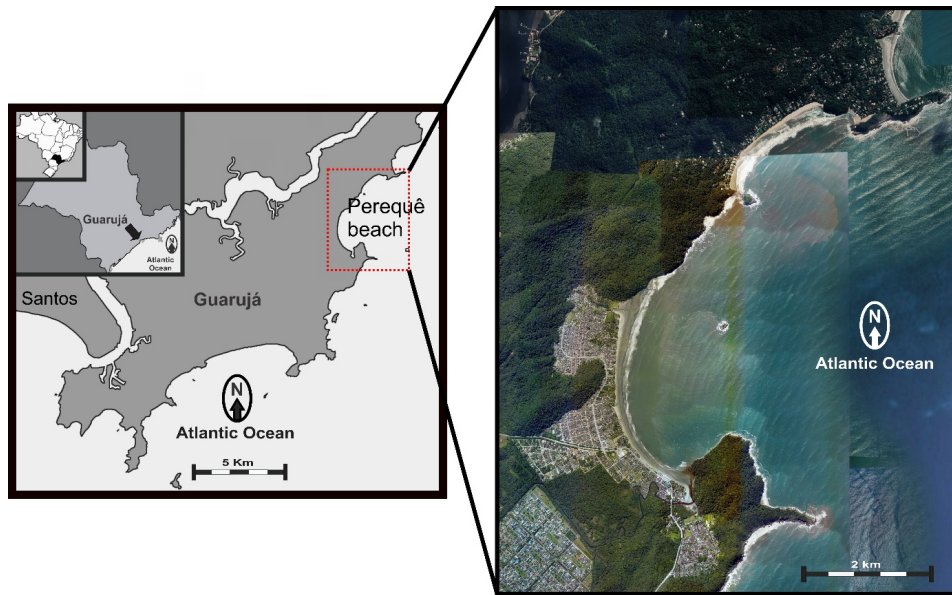


Figure 1 – Location of Perequê Beach (Guarujá/SP)

Source: Prepared by the authors based on images from Google Earth.

Based on the presented scenario, this study aims to evaluate the psychosocial dimensions of the local community living in Perequê Beach in terms of environmental perception, pro-ecological behaviours and quality of life.

1.1 ON THE ENVIRONMENTAL PERCEPTION

According to the program *Man and Biosphere*, created in 1971 by the United Nations Educational, Scientific and Cultural Organization (Unesco, 1971), environmental perception is understood as an awareness and understanding by humans of the environment in the broadest sense, involving more than an individual sensory perception, such as vision or hearing (Whyte, 1978). In a framework under the perspective of environmental movements, environmental perception is also considered as an awareness of issues linked to the environment, linked to cultural aspects of everyone (Dorigo; Laman-Ferreira, 2015). These perceptions emerge from interactions with different environmental systems, from the closest (such as family and school systems) to the most distant (for instance, cultural and ideological systems) (Bronfenbrenner, 2011; Pereira; Reis, 2016). Therefore, perception is a response from the different senses (sight, hearing, touch, smell and taste) to external stimuli unique to the environment or widespread in culture, as well as a selective activity through which some phenomena are registered while others do not (Tuan, 2012). This last characteristic is related to interactions between perception and elements associated with motivations present in human values.

Since the 1960s, academic studies on perception have been produced from the perspective of the environmental area, particularly in humanist research linked to urbanism and human geography (Rodrigues *et al.*, 2012). Especially from the 1970s, when ecological movements emerged, studies on the perception were expanded to Environmental Psychology. Since then, different definitions of environmental perception have been proposed under different conceptual foundations. Thus, assessments of environmental perception are often challenging. Such studies are commonly performed by using interviews or questionnaires including closed and/or open questions. In this regard, many authors create their own questionnaires seeking to evaluate environmental perception.

According to Oliveira-Monteiro and Silva (2018), based on Lucena and Freire (2014), environmental perception encompasses domains of perception (informative and sensory elements; relationship and

knowledge of the environment), attitudes (experiences, opinions and actions related to environmental conservation) and values (affective and leisure values attributed to the environment). The informative and sensorial elements of environmental perception refer to the knowledge accumulated on different aspects of the environment. In this sense, the environment is understood as the core set of physical, chemical, and biological conditions, laws, influences, and interactions that operate on the Earth and affect human life. In fact, this was defined in 1972 by the United Nations (UN) and confirmed by the Stockholm Convention on the Human Environment, the first international declaration on this matter (United Nations Environment Programme, 1972).

Attitudinal elements related to the environment are associated with personal and social worldviews and lifestyles. These attitudes can be based on positive values permeated by an emotional identification with the environment. In this sense, the “topophilia” concept is worth remembering, a construct referring to the affective link between society and the environment. Such links may be enriched by knowledge of local history, which is directly related to components of the environment based on perceptions of beauty and the importance of the place (Tuan, 2012). In turn, the evaluative elements of environmental perception include individual ideals and principles (Pato, 2011). Thus, environmental values seek the equilibrium and sustainability of relationships between ecosystems or environments that are directly related to beliefs, attitudes, and behaviours that are ecologically responsible. Such behaviours may expand the capacity to use available natural resources on Earth, generating low impact on natural environments (Pato; Campos, 2011).

1.2 ON THE PRO-ECOLOGICAL BEHAVIORS

Pro-ecological behaviours are also called pro-environmental, ecological or environmental behaviours. This class of behaviours has been studied in association with environmental movements and is often related to moral values, personal beliefs, social norms and ethics (Becker; Félonneau, 2011; Corral-Verdugo; Pinheiro, 1999; Pinheiro *et al.*, 2014). These different nominations tend to incorporate aspects related to pro-environmental conduct, highlighting motivations leading individuals to defend the environment or minimise harmful effects. Moreover, environmental concern has also been considered as a determining factor, although indirect, in these environmental behaviours (Pereira; Pato, 2015).

According to Pato and Tamayo (2006), the expression “ecological behaviours” refers to pro-environment behaviours towards sustainable use of natural resources. They are part of people’s behavioural repertoire, intentionally or unconsciously, actions learned and internalised. Underlying these ecological behaviours (also called pro-ecological behaviours), ethics, values and motivations by acting in defence of the environment, based on sustainability principles and recognition between human relations and the environment, are also considered. Therefore, the links with values portray a complex facet of ecological behaviours since values formation not only depends on pedagogical actions (such as environmental education) but is also linked to other socio-environmental contexts integrating individuals, such as familial, religious and political.

1.3 ON QUALITY OF LIFE

In 1995, the World Health Organization (WHO), through the WHOQOL Group, advocated the first standardised concept of Quality of Life, “as an individual’s perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns” (Whoqol Group, 1995). Thus, quality of life was defined as a multidimensional concept, providing different elements of the living conditions of the people. Although there are several explanatory aspects for Quality of Life, based on the WHO definition, it began to be understood in a comprehensive way in interactions among different systems, including individual, sociocultural or historical issues. The study of Quality of Life is international and involves a wide variety of target

groups, using different research methods and many types of assessments (Haraldstad *et al.*, 2019). The WHOQOL proposed instruments to assess the quality of life based on four different domains: 1) physical (related to comfort, discomfort, and pain), 2) psychological (positive and negative feelings, body image and appearance, self-esteem, memory, concentration and ability to learn and think), 3) social (personal relationships, social support, and sexual activity), and 4) environment (safety, home environment, financial resources, health and social care, opportunity and ability to acquire information, leisure, pollution, noise, traffic, climate and transport).

The Federal Constitution of Brazil (FC), enacted in 1988, mentions Quality of Life in its article 225, relating to the rights as an ecologically balanced environment (Brasil, 1988). In addition, several provisions ensure the right to quality of life throughout the FC. Thus, quality of life is associated with fundamental rights and guarantees, the economic order, and the right to an ecologically balanced environment.

2 METHODS

Cross-sectional quantitative research aims to describe environmental behaviours and perceptions without direct intervention by the researcher in the environment (Field; Miles; Field, 2012).

2.1 PARTICIPANTS

Residents (adults and elderly) living in the Perequê neighbourhood for at least one year were interviewed. The sample composition's homogeneity regarding sex (men and women) and age groups (young adult, middle-aged and elderly) was sought. However, the sampling considered convenience and accessibility criteria for the researchers, inviting people who passed through the study site (Hulley *et al.*, 2014).

2.2 INSTRUMENTS

Sample data such as participant gender and age were collected using the instruments (questionnaires) listed below.

2.2.1 ENVIRONMENTAL PERCEPTION QUESTIONNAIRE - BEACH (EPQB)

The assessment of environmental perception was performed through the *EPQB*, an adaptation of the instrument used by Oliveira-Monteiro and Silva (2018) to evaluate mangrove environments. The original questionnaire was, therefore, adapted to coastal environments, replacing the word "mangrove" with "beach". The *EPQB* was based on 11 closed-ended questions focused on three domains: 1) perceptual (information/knowledge about the environment and sensory/relationship), 2) values (affective and leisure values attributed to the environment), and 3) attitudes (experiences, opinions and actions related to environmental conservation). From the perspective of environmental perception, such domains are often articulated and integrated. For instance, values are constructed from information and sensory perception, which may lead to positive or negative environmental attitudes. The used instrument also includes three open-ended questions regarding personal descriptions of the local landscape, requiring the respondents to point out the main problem of living in the neighbourhood. On the other hand, the interviewees were also asked about what would be "the best" in the neighbourhood.

2.2.2 ECOLOGICAL BEHAVIOR SCALE (EBE)

To assess pro-ecological behaviours, EBE was used, which was previously developed and validated in Brazil by Pato e Tamayo (2006). This instrument is based on 27 questions related to individual pro-environmental actions. Using a five-point Likert scale, the respondent indicated the degree of agreement with the sentences presented.

2.2.3 WHOQOL-BREF

The quality of life of respondents was assessed using the WHOQOL-bref (Fleck *et al.*, 2005). The Whoqol-bref is an abbreviated version of Whoqol-100 for quality-of-life assessment. This tool was developed by the Quality-of-Life Group of the Mental Health Division of the WHO and translated in Brazil by the Department of Psychiatry and Forensic Medicine at the Federal University of Rio Grande do Sul using 26 questions presenting the best psychometric performances extracted from Whoqol-100. As previously mentioned, the domains evaluated are: 1) physical (pain and discomfort), 2) psychological (positive and negative feelings, body image and appearance, self-esteem, memory, concentration and ability to learn and think), 3) social relationships (personal relationships, social support and sexual activity) and 4) environment (security, home environment, financial resources, health and social care, opportunity and ability to acquire information, leisure, pollution, noise, traffic, climate and transportation).

2.2.4 BRAZILIAN CRITERIA OF ECONOMIC CLASSIFICATION (BCEC)

The economic characterisation of the sample was based on BCEC, from the Brazilian Association of Research Companies (ABEP, 2022). This instrument comprises family comfort items, access to basic sanitation, street paving and the education of the head of the family (understood as the person who contributes most of the family income).

2.3 ETHICAL PROCEDURES FOR RESEARCH USING HUMAN BEINGS

The research protocols were previously submitted through Plataforma Brasil for evaluation by the Unifesp Research Ethics Committee, and the approval decision was received (No. 5090212). For agreement and signature, an Informed Consent Form (ICF) was presented to all participants. Signed copies of these ICFs are filed at LADH/Unifesp.

2.4 DATA COLLECTION PROCEDURES

After an initial foray onto Perequê beach, data was collected in person, with ecological insertion of researchers (Prati *et al.*, 2008), in public places, commercial establishments, on the beach, in a family health Unit, and a neighbourhood residence. For that, local leaders and the health equipment coordination carried out a prior intermediation. Despite these collaborations, in compliance with ethical procedures, explanations on the investigation objectives and presentations of the informed consent form signed, there were several refusals. Some expressions of refusal were related to issues related to previous surveys, which, as claimed, led to losses by fishermen. In other cases, participants seemed to be afraid of scams or breaches of confidentiality. In this regard, the temporal overlap of data collection with the pre-election period of 2022 and the demographic census carried out by the Brazilian Institute of Geography and Statistics (IBGE) may have led to a lower willingness and availability of people invited to participate. After invitations and acceptance, under ethical procedures, the ICF was presented, proper explanations were provided, and signatures were collected. The individual

data collection took place over 10 visits to the neighbourhood (dates: 06/30/2022, 07/20/2022, 08/03/2022, 09/16/2022, 09/21/2022, 12/01/2023, 03/29/2023, 04/25/2023, 04/26/2023 e 04/27/2023). During the interviews, the data collection team was adequately identified as university members using badges and lab coats. At some points during the collection, the researchers used face masks per the university's fieldwork guidelines and state measures to contain the Covid-19 pandemic.

2.5 DATA ANALYSIS PROCEDURES

The QPAP (Environmental Perception) data were analysed by the frequencies of responses to the 11 closed-ended questions. The content analysis model (Bardin, 2010) was used to analyse the responses to open-ended questions, including reading and organisation of relevant aspects of the text communicated by the interviewees and selecting units of analysis and classification of data into categories. The PEB (Pro-Ecological Behaviors) results were tabulated according to instrumental standards. Similarly, the WHOQOL-bref (Quality of Life) results were calculated according to standards (Fleck *et al.*, 2005), considering the physical, psychological, social and environmental domains. The CCEB scores were calculated according to Abep (2022) based on economic subclasses A, B, C and D/E. The numerical data presented in the present study were analysed using descriptive statistics (means, standard deviation and frequencies). All analyses were performed using the software Jasp (0.14.1) and Excel (2016).

3 RESULTS AND DISCUSSION

A total of 86 adult individuals participated in the investigation, of which 52 (60.46%) were women, and 34 were men (Figure 2a). Regarding economic classification, most of the sample (46.51%) belonged to class C, 26% to class B and 16% to class D (Figure 2b). The ages ranged from 18 to 75 years (mean = 38.9 years; SD = 5.4 years), with a predominance of younger people under 33 years old (Figure 2c). Most respondents have lived in the Perequê neighbourhood since 2000, suggesting a good sense of belonging and territorial Identity.

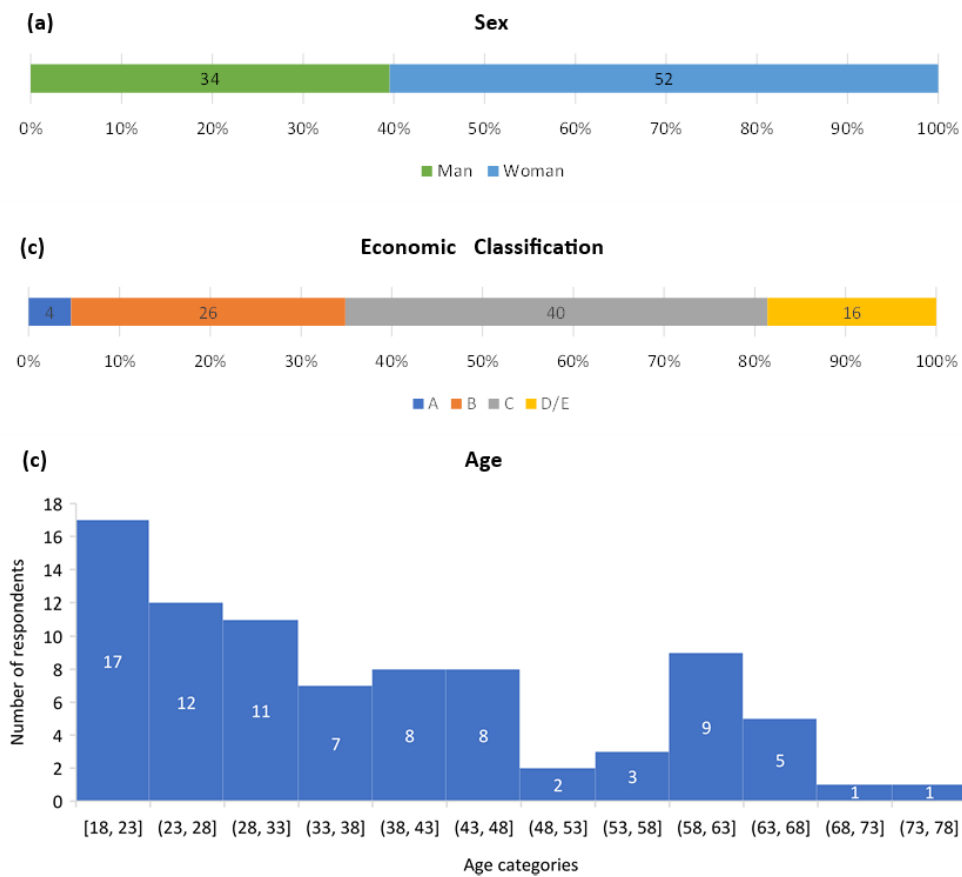


Figure 2 – Gender (a), economic classification (b) and age distribution (c) of respondents

Source: Prepared by the authors.

3.1 RESULTS ON ENVIRONMENTAL PERCEPTION

According to the QPAP tool, the obtained results were presented following the domains of environmental perception: 1) perception (relationship and knowledge about the environment, encompassing informative and sensory elements), 2) attitudes (experiences and opinions regarding environmental conservation), and 3) values (affective and leisure values attributed to the environment). The responses collected by each question group, across its three domains, allowed to elucidate meanings on which the participants based their opinions.

3.1.1 PERCEPTION DOMAIN

Informative elements (Figure 3) of environmental perceptions were present by most of the respondents (84.88%), indicating references to the knowledge of animals living in the coastal region alongside mentions of domestic animals (dogs and cats). Thus, in the present study, species of marine animals were mentioned, such as fish (catfish, mullet, shark and sea bass), crustaceans (crab, crab, shrimp and guava) and mammals (whale and dolphin).

In this regard, a study performed by Oliveira-Monteiro and Silva (2018), assessing perceptions of residents of Baixada Santista living in irregular occupations close to a mangrove forest, obtained similar results (80%). Additionally, the participants mentioned other species of mammals (such as capybara, saruê, squirrel, fox, jaguar, armadillo, among others). Most participants broadly recognised animals from the Perequê beach (Figure 3a). This universe of references, including animals, demonstrates a

close interaction with fauna living on the beach and in the Atlantic Forest region in the vicinities of the neighbourhood. However, a low frequency of respondents (38.37%) reported using fish as food (Figure 3b).

On the other hand, as presented in Figures 3c and 3d, the results on knowledge of plants indicated a lower identification with local flora (45.34% denied knowledge about plants, while 54.65% claimed to know them, citing mainly *embaúba*, bromeliad, orchid, coconut tree, *chapéu de sol*, *boldo*, *manacá-da-serra* and fern). Such observation may be associated with higher familiarity with marine animals since fishing is a relevant subsistence activity in that neighbourhood. As stated by Diegues (2019), this specific knowledge may be linked to traditional fields, including information about marine fauna from residents of coastal regions.

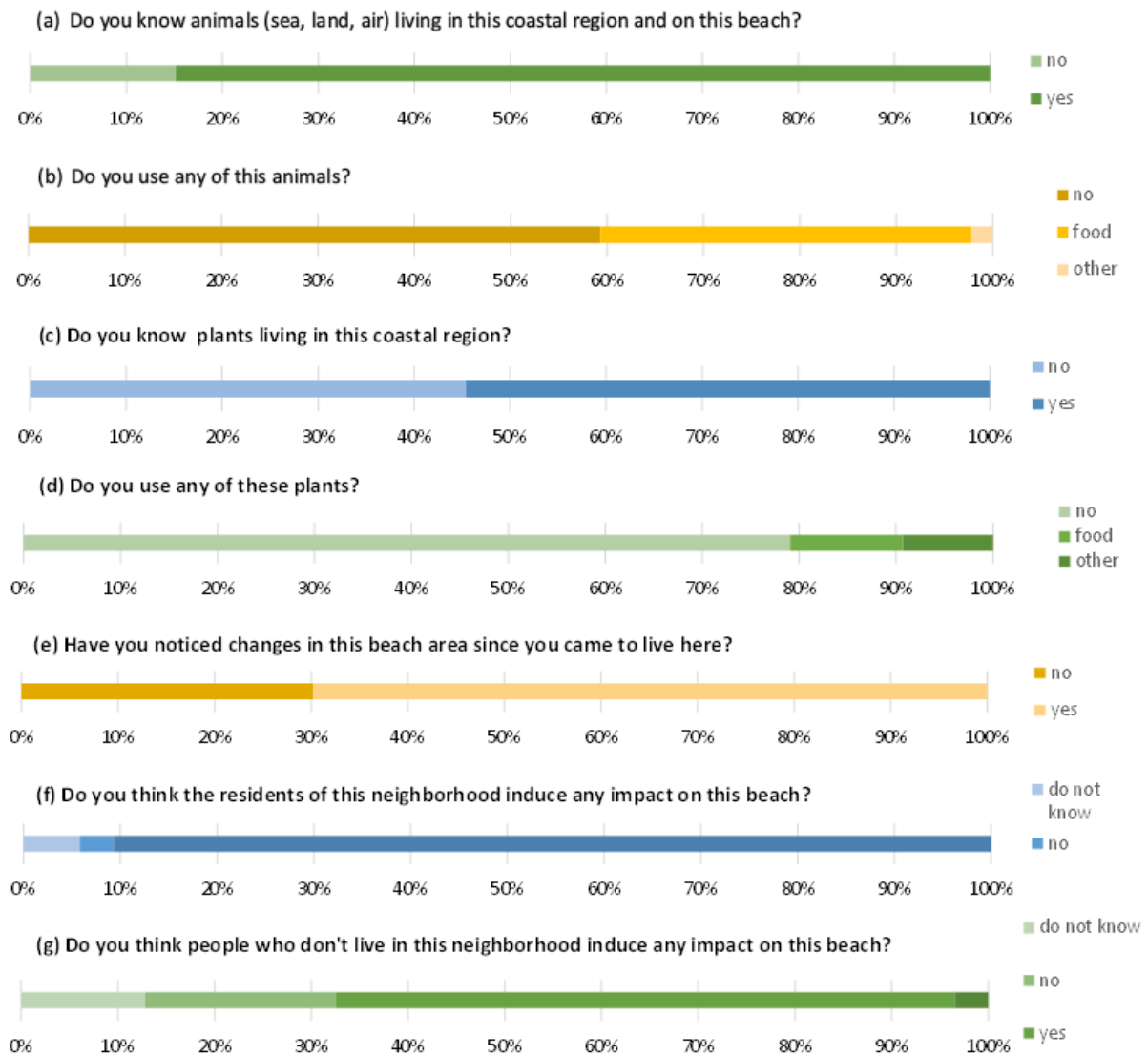


Figure 3 – Percentage of responses to the Environmental Perception questionnaire – Beach within the perception domain

Source: Prepared by the authors.

The sensory elements of environmental perception were related to possible changes in the coastal zone during the period in which they lived in the neighbourhood. Thus, 20.93% of the respondents claimed to have lived in Perequê Beach between 2000 and 2004, and 19.77% had lived there since before

the 1990s. Most participants (69.77%) stated that there had been changes since they started living in the neighbourhood (Figure 3e). Alongside positive changes, such as improvements in public lighting, paving, and increased commerce, negative alterations were mentioned, mainly pollution increase and invasions of protected areas. Furthermore, most respondents considered that both residents and non-residents had an impact on the beach, with negative impacts always associated with inadequate waste disposal. However, the mentions of impacts caused by non-residents were less recurrent (63.95%; Figure 3f) than those pointing out neighbourhood residents (90.69%; Figure 3g).

Thus, contrary to the results obtained by Oliveira-Monteiro and Silva (2018) using the same instrument with residents of mangrove regions, the participants of the present study mostly included themselves as potential inducers of environmental impacts in Perequê Beach. In addition to pollution aspects, the construction of irregular housing was also highlighted as impact-causing by residents. Furthermore, seven participants (8.14%) stated that such impacts are related to a lack of awareness about the importance of environmental conservation. Moreover, the lack of sanitation and the release of waste and sewage into the Peixe River, which passes through the neighbourhood and flows into the sea, was cited 11 times by respondents (12.79%).

According to several statements, the main issues of living in Perequê Beach were the distance from the city centre of Guarujá (probably suggesting limited public transport) and the lack of basic sanitation, infrastructure and public security. Further, the lack and/or absence of doctors at the neighbourhood Family Health Unit was also mentioned. When asked about the best attributes of Perequê Beach, the most common responses were associated with aspects of restorative environments (Gressler; Günther, 2013), especially the proximity to the seacoast (Danovaro *et al.*, 2021). References to nature, tranquillity, peace, beach, peace and security were common. In contrast to complaints regarding security, nine residents stated that there was no violence or robberies in the neighbourhood, while a few people suggested that local drug dealers provide security, indicating parallel actions apart from public authorities.

3.1.2 ATITUDES DOMAIN

Environmental attitudes are considered predictors of pro-environmental behaviours (Shafiei; Maleksaeidi, 2020). Results regarding the attitudinal field (Figure 4) indicated a higher frequency (90.86%) of confirmatory manifestations associated with interest in taking care of the region.

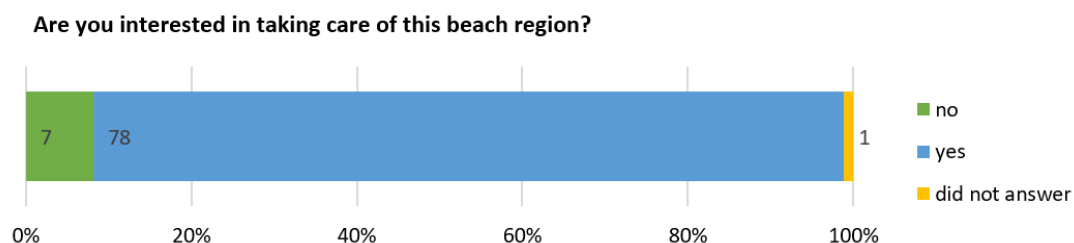


Figure 4 – Percentage of responses to the Environmental Perception questionnaire – Beach within the domain of attitudes

Source: Prepared by the authors.

Responses indicating strong feelings of territoriality were often perceived, probably associated with identification and long periods of living in the neighbourhood. The confirmatory manifestations of the desire to conserve the region - through explicit citations referring to the need for care for future generations - may be related to disseminating information about sustainability issues, probably conveyed by the media. Most respondents mentioned aspects indicating a positive valuation of the local environment (91.86%) and the affirmation of enjoying living in Perequê Beach. Such positive valuation,

as well as affective territoriality, were expressively pointed out as qualifications indicative of connection with nature (Mackay; Schmitt, 2019) by using expressions such as wonderful, light, magnificent, calm, splendid and unique place - also characteristics of restorative environments close to the sea (Danovaro *et al.*, 2021). Although not very frequently, a few residents defined the territory as dirty, unpleasant and polluted, citing the sewage that flows onto the beach and invasions. However, these negative references were never directly associated with the nature of that environment, suggesting anthropic actions.

3.1.3 VALUES DOMAIN

In the domain of values, when asked about the importance of the beach area, most respondents expressed themselves positively (Figure 5). In this case, reasons linked to territoriality, leisure provided by the beach, work opportunities with fishing, maintenance of environmental beauty, and values of a sentimental nature were again explained.

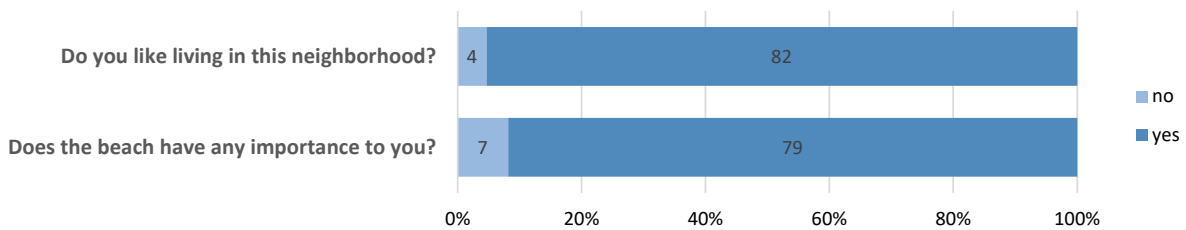


Figure 5 – Percentage of responses to the Environmental Perception questionnaire – Beach within the domain of values

Source: Prepared by the authors.

When asked if they liked living in the neighbourhood, most respondents also said yes (Figure 5), indicating the tranquillity, nature and identification with the place. Participants described the beach as magnificent, beautiful, perfect, calm, and wonderful, among other positive adjectives. As already mentioned, and reaching the field of values, negative descriptions were related to pollution, dirt, and a weak, unpleasant region, suggesting negative valuations associated with human interventions in the territory.

Mackay *et al.* (2019) stated that nature does not always need to be seen as positive or beneficial for human beings, as nature identification does not require that all experienced aspects be always pleasurable from a human perspective. Although some respondents have attributed negative descriptions to the studied environment, they still expressed respect for nature, emphasising the personal importance of the beach (91.86%).

3.2 PRO-ECOLOGICAL BEHAVIORS

Results related to Pro-ecological behaviours are presented in Figure 6. The most frequently mentioned pro-ecological behaviours were related to saving costs, such as “I turn off the lights when I leave empty spaces” (average = 5.56) or “I avoid wasting energy” (mean = 5.48). The behaviour “I keep the paper I no longer want in my bag when I can’t find a trash can nearby” (average = 5.44) was also frequently mentioned. These results may be related to local national regulations relating to these behaviours, such as the National Policy on Climate Change (Brasil, 2009), the National Solid Waste Policy (Brasil, 2010) and the new Brazilian Forest Code (Brasil, 2012).

Ecological behaviours related to saving water and energy (probably related to saving financial expenses) and urban cleaning stood out as references for those investigated, in line with the results

of Beuron *et al.* (2012). Furthermore, although these pro-ecological behaviours, presenting higher averages among respondents, are considered pro-environmental social changes, it is important to highlight that Batson and Thompson (2001) warn about “moral hypocrisy”. According to these authors, such behaviour may lead research participants to provide socially expected answers to the questions presented, being more frequent in non-experimental studies that include some association with moral behaviours.

On the other hand, according to the evaluated residents of Perequê Beach, the least practised behaviour was associated with: “when I don’t find trash cans nearby, I throw empty cans on the ground” (average = 1.41). Indeed, such a statement should be inverted, as it represents the opposite objectives of the instrument, which was proposed to verify pro-environmental behaviours.

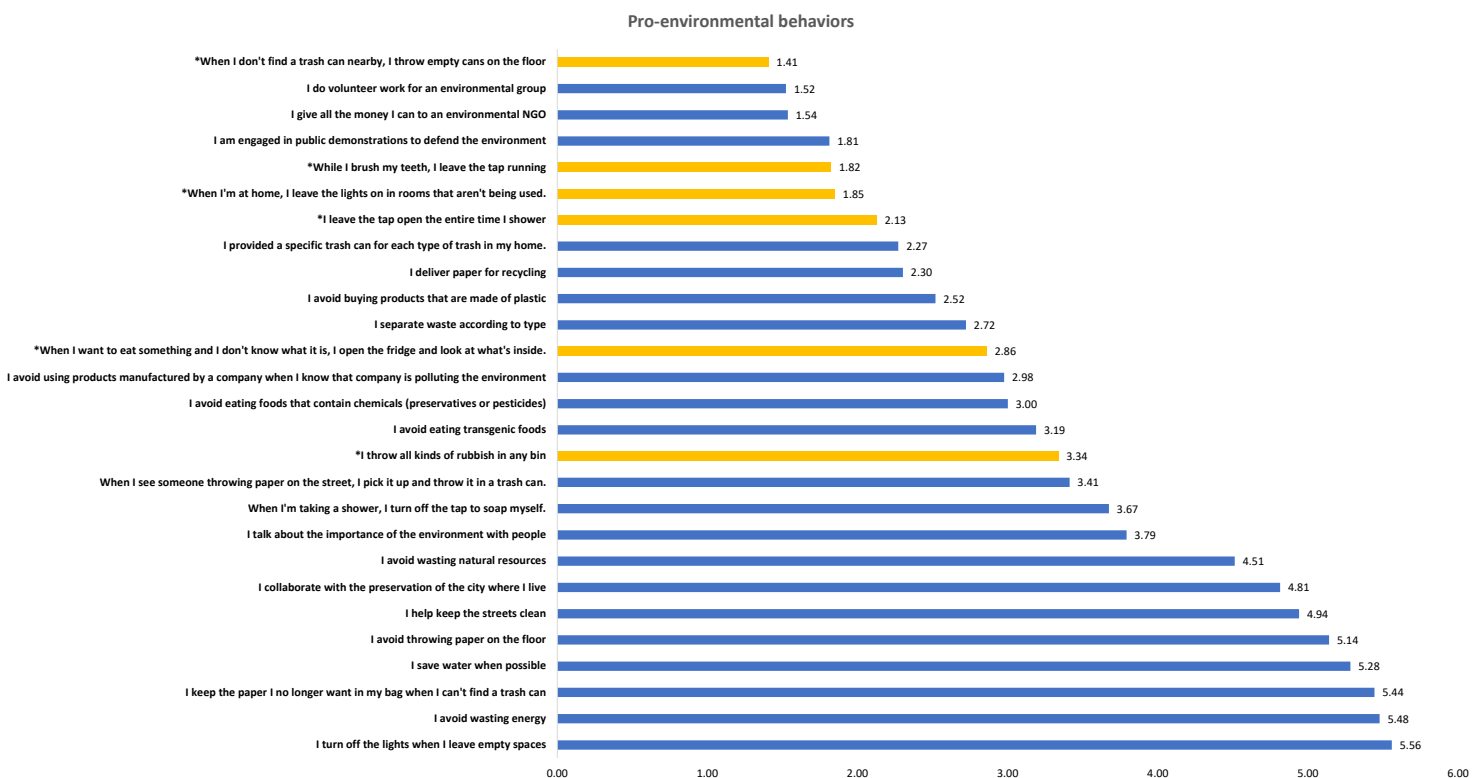


Figure 6 – Results of the assessment using the Ecological Behavior Scale

Source: Prepared by the authors.

Note: * behaviours to be inverted on the scale, as it represents the opposite objectives of the instrument, which was proposed to verify pro-environmental behaviours.

The questions, “I do voluntary work for an environmental group” (average = 1.52) and “I give all the money I have to an environmental NGO” (average = 1.54), also among the lowest averages in the sample, are part of the list of behaviours called “social desirability”, according to Pato and Tamayo (2006). Such questions were included in the scale to serve as parameters of “the most ecological possible”. However, it was expected to have low valuations for these questions. Interestingly, ecological behaviours presenting the lowest values were those related to the proper disposal and recycling of garbage, which was described as annoying in the environmental perception questionnaire.

3.3 QUALITY OF LIFE PERCEPTION

Results of the WHOQOL-bref, including domains psychological, social, environmental and physical, are presented in Figure 7. Quality of life had the highest average value (average = 4.10) in the psychological

domain, which includes questions about positive feelings about life, in addition to questions about self-esteem, body image and appearance, negative feelings, memory and concentration (Fleck *et al.*, 2005). These positive psychological conditions can be associated with connection, proximity and insertion in the local environment, providing clear restorative conditions (Danovaro *et al.*, 2021) - not only the beach but also green spaces - areas of Atlantic Forest still present in the region.

There is a consensus that interactions with natural environments provide physical and mental health to people (White *et al.*, 2016). The environmental mechanisms linked to health promotion are stress reduction, encouragement of physical activities and social interactions (Hartig *et al.*, 2014). Still, according to White *et al.* (2016), individuals living close to the coast were healthier and happier than those who lived inland, especially in the case of poorer populations. Indeed, coastal areas can offer greater leisure and health promotion spaces free of charge.

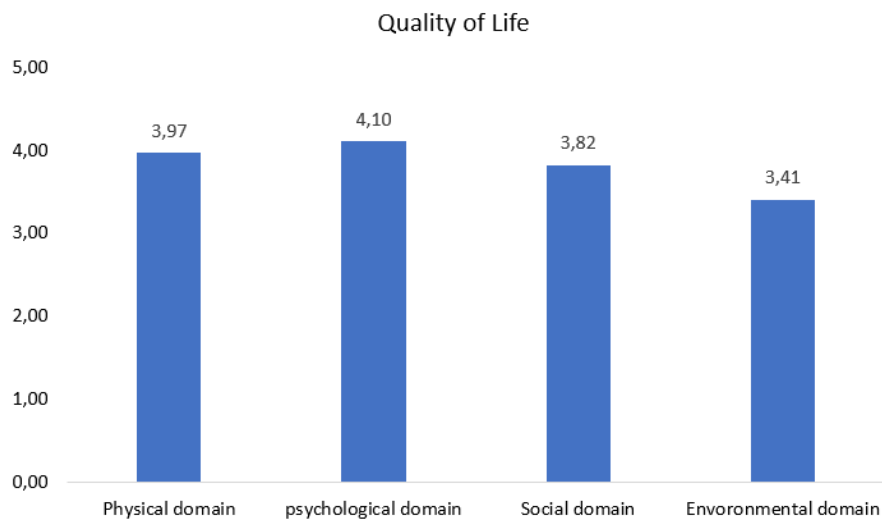


Figure 7 – Results of the quality-of-life assessment using the WHOQOL-bref in its psychological, social, environmental and physical domains

Source: Prepared by the authors.

On the other hand, the lowest average of the four evaluated domains was related to the environmental domain (average = 3.41). This domain includes issues related to physical safety, home environment, financial resources, availability and quality of health and social care, opportunity to acquire new information and skills, leisure opportunities, transportation and physical environment (Fleck *et al.*, 2005). Oliveira-Monteiro and Silva (2018) assessed mangrove residents using WHOQOL-bref and reported positive results in three of the four domains. Similarly to the present study, the environmental domain related to mangroves reached the lowest valuation (average = 3.24), even lower than the average for residents of Perequê Beach (average = 3.41).

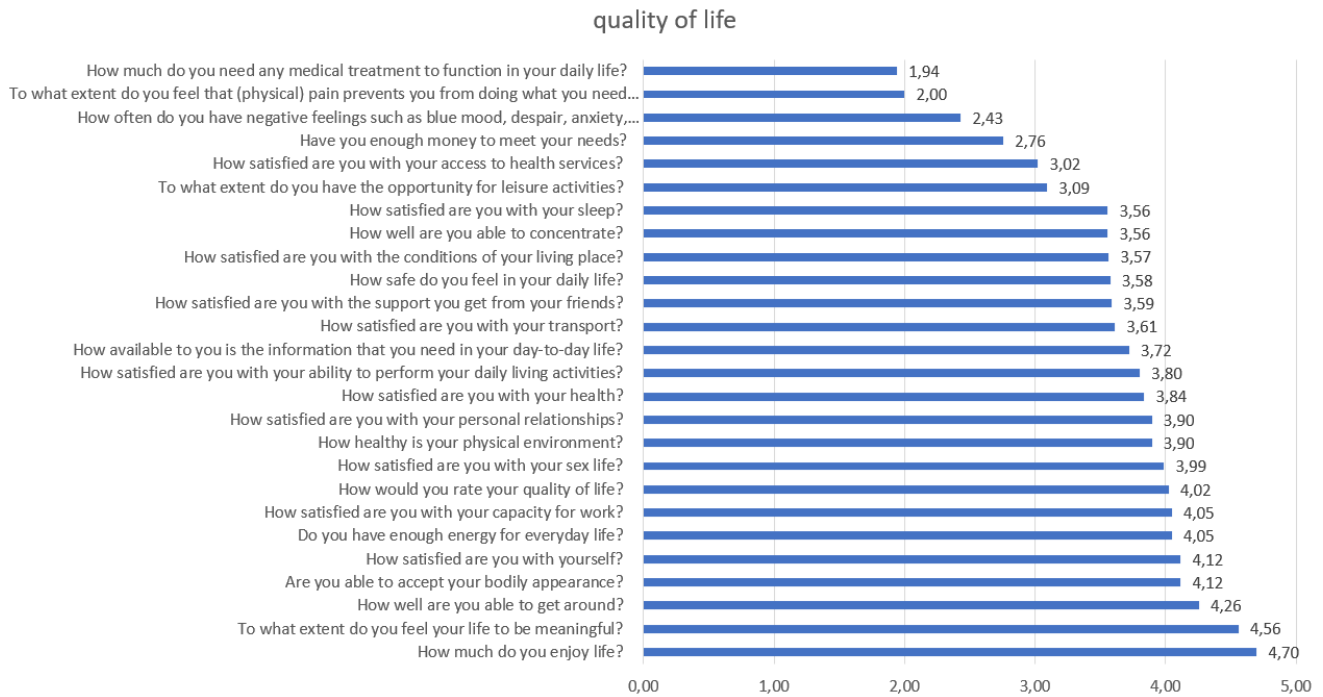


Figure 8 – Results of the quality-of-life assessment using the WHOQOL-bref, detailing assessed items

Source: Prepared by the authors.

Although most of the respondents have considered the neighbourhood a restorative environment (according to the results of the environmental perception questionnaire), the lower valuation achieved in the environmental domain of Quality of Life may also be related to the predominance of economic class C in the sample. This pattern was already highlighted by Gordia *et al.* (2009), which found positive correlations between less affluent economic classes and lower quality of life (measured in the environmental domain of the WHOQOL-Bref).

Many housing areas in the Perequê neighbourhood are considered irregular, including those in “invasion areas”, a fact reported by some participants. According to Sales *et al.* (2006), residents of irregular occupations may have a lower quality of life due to the lack of access to adequate infrastructure.

The items of the Quality-of-Life instrument reaching the lowest averages were related to financial resources to satisfy needs, opportunity to carry out leisure activities and satisfaction with access to health services (Figure 8). These results may indicate that, although residents were satisfied with some conditions associated with restorative environmental conditions in the place where they lived, they did not consider the financial resources they had sufficient to meet their needs. In addition to economic difficulties, the residents of Perequê Beach were not satisfied with access to available health services, which was also manifested in the environmental perception questionnaire, with some residents reporting the lack of doctors at the neighbourhood health unit.

In research on parks, Camargo *et al.* (2017) suggest an interaction between personal and environmental characteristics, subjective and objective, related to urban park regions, health conditions and physical activity contributing to the perception of quality of life. Parks are characterised as *green spaces* that promote well-being with green nature (Foley; Kistemann, 2015). In turn, the present research evaluated individuals living in blue spaces, places close to water bodies (such as beaches, lakes and rivers) (Foley; Kistemann, 2015; White *et al.*, 2020).

As mentioned above, the item on the opportunity to carry out leisure activities reached one of the lowest averages (3.09) in the WHOQOL-bref (Figure 8). This finding points out the need for leisure

activities and places for that population. It is also worth mentioning that living close to water bodies on the beach is very conducive to physical activities and leisure, promoting human well-being (Foley; Kistemann, 2015).

4 CONCLUSIONS

This investigation assessed self-references on environmental perceptions, pro-ecological behaviours and quality of life among residents of Perequê Beach. The obtained results are limited to the participants' perceptions within the scope of the method used (cross-sectional, self-report quantitative research, with a convenience sample). Investigations of self-references of this nature, inserted in socio-environmental scenarios such as the one considered in the study, have not been presented in the literature. This lack of similar studies did not favour a broader discussion of the data in a comparative sphere. This constitutes a limitation of the study and, simultaneously, indicates the need for additional research along the same lines.

The positive environmental perception mentioned by respondents was related to experiences in interactions with green space environments - the hills close to the neighbourhood - in addition to the constant interactions with blue spaces on the beach and rivers of the region. Therefore, this environmental positivity coexisted with self-references of difficulties in that environment.

Issues on urban mobility, such as deficient transport services, difficulties in obtaining public health care, and inadequate waste disposal, contributed to the negative perceptions found in the environmental domain when evaluating the quality of life. This set of circumstances suggests that public policies aiming to implement environmental education strategies simultaneously targeting residents and occasional visitors, improving transport and safety in the neighbourhood, supplying public health equipment and promoting public leisure activities should be adopted.

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