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Article

Riverside health in the Amazon: a situational study of a Family Health Unit on Onças Island, Pará

Saúde ribeirinha na Amazônia: estudo situacional de uma Unidade de Saúde da Família na Ilha das Onças, Pará

Salud ribereña en la Amazonía: estudio situacional de una Unidad de Salud Familiar en la Isla de las Onças, Pará

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Abstract

Objective: to conduct a situational diagnosis of the Riverside Family Health Unit on Ilha das Onças, in the municipality of Barcarena, Pará, Brazil, focusing on sociodemographic, epidemiological, territorial, and infrastructure data. **Methodology**: this observational, documentary, descriptive, and exploratory study adopted a quantitative approach, using secondary data and geospatial analyses to characterize the sociodemographic, epidemiological, and territorial profile associated with the Riverside Family Health Strategy in the Amazon region, specifically the Vital Costa Gouvêa Primary Health Care Unit on Ilha das Onças, in the municipality of Barcarena, Pará, Brazil. The data refer to 2024. **Results:** the findings revealed a catchment area comprising 2,449 inhabitants in 812 households,

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all entirely dependent on river transportation to access health services. The territorial analysis identified significant socio-environmental vulnerabilities, including a lack of basic sanitation, regular access to treated water, waste collection, a continuous electricity supply, and connectivity. These conditions represent social determinants that contribute to widening health inequities. The demographic profile showed that the economically active population predominated (57%), with a higher proportion of males (51,93%) and a greater concentration of working-age adults. Regarding the epidemiological profile, arterial hypertension, alcohol use, and smoking were identified as the main health conditions and risk factors. Conversely, the low number of recorded cases of tuberculosis, leprosy, and Chagas disease, compared with the epidemiological profile of the state of Pará, suggests possible limitations in case detection and reporting. **Conclusion:** the situational diagnosis demonstrated that the area covered by the Riverside Family Health Unit on Ilha das Onças faces significant socio-environmental vulnerabilities, geographical barriers, and structural weaknesses that affect access to and the organization of Primary Health Care. The findings reinforce the importance of territorialization as a strategic tool for local health planning and the development of more equitable, context-sensitive public policies and interventions tailored to the specific needs of riverside populations.
Keywords: Family Health Strategy; Situational Diagnosis; Primary Health Care Territorialization; Primary Health Care.

Resumo

Objetivo: realizar diagnóstico situacional abordando dados sociodemográficos, epidemiológicos, territoriais e de infraestrutura da Unidade de Saúde da Família Ribeirinha, localizada na Ilha das Onças, município de Barcarena, no Pará. **Metodologia:** com base em dados referentes ao ano de 2024, foi realizado um estudo observacional, documental, descritivo e exploratório, de abordagem quantitativa, com uso de dados secundários e análises geoespaciais para caracterização sociodemográfica, epidemiológica e territorial vinculada à Estratégia de Saúde da Família Ribeirinha da região Amazônica, Unidade Básica de Saúde Vital Costa Gouvêa, localizada na Ilha Das Onças, no município de Barcarena, Pará. **Resultados:** evidenciou-se uma área adscrita composta por 2.449 habitantes distribuídos em 812 domicílios integralmente dependentes do transporte fluvial para acesso aos serviços de saúde. A análise do território revelou importantes vulnerabilidades socioambientais, caracterizadas pela ausência de saneamento básico, de abastecimento regular de água tratada, de coleta de resíduos, de energia elétrica contínua e conectividade, configurando determinantes sociais que ampliam as iniquidades em saúde. O perfil demográfico mostrou predominância da população economicamente ativa (57%), predomínio masculino (51,93%) e maior concentração de adultos economicamente ativos. No perfil epidemiológico, destacaram-se hipertensão arterial, uso de álcool e tabagismo como principais condições e fatores de risco. Por outro lado, a baixa ocorrência registrada de tuberculose, hanseníase e doença de chagas, em contraste com o cenário epidemiológico do estado do Pará, sugere possíveis limitações na detecção e notificação dos casos. **Conclusão:** o diagnóstico situacional evidenciou que o território da Unidade de Saúde da Família Ribeirinha da Ilha das Onças apresenta importantes vulnerabilidades socioambientais, barreiras geográficas e fragilidades estruturais que influenciam o acesso e a organização da Atenção Primária à Saúde. Os achados reforçam a territorialização como ferramenta estratégica para o planejamento local e para a formulação de ações e políticas públicas mais equitativas, contextualizadas e adequadas às especificidades das populações ribeirinhas.
Palavras-chave: Estratégia Saúde da Família; Diagnóstico Situacional; Territorialização da Atenção Primária; Atenção Primária à Saúde.

Resumen

Objetivo: realizar un diagnóstico situacional abordando datos sociodemográficos, epidemiológicos, territoriales y de infraestructura de la Unidad de Salud de la Familia Ribereña, ubicada en la Ilha das Onças, municipio de Barcarena, Pará, Brasil. **Metodología:** estudio observacional, documental, descriptivo y exploratorio, con enfoque cuantitativo, utilizando datos secundarios y análisis geoespaciales para la caracterización sociodemográfica, epidemiológica y territorial vinculada a la Estrategia de Salud de la Familia Ribereña de la región Amazónica, específicamente de la Unidad Básica de Salud Vital Costa Gouvêa, ubicada en la Ilha das Onças, municipio de Barcarena, Pará, Brasil. Los datos corresponden al año 2024. **Resultados:** se identificó un área adscrita compuesta por 2.449 habitantes distribuidos en 812 hogares, totalmente dependientes del transporte fluvial para acceder a los servicios de salud. El análisis territorial evidenció importantes vulnerabilidades socioambientales, caracterizadas por la ausencia de saneamiento básico, abastecimiento regular de agua tratada, recolección de residuos, suministro continuo de energía eléctrica y conectividad, configurando determinantes sociales que amplían las inequidades en salud. El perfil demográfico mostró un predominio de la población económicamente activa (57%), una mayor proporción de hombres (51,93%) y una mayor concentración de adultos en edad económicamente activa. En el perfil epidemiológico destacaron la hipertensión arterial, el consumo de alcohol y el tabaquismo como las principales condiciones y factores de riesgo. Por otro lado, la baja ocurrencia registrada de tuberculosis, lepra y enfermedad de Chagas, en contraste con el escenario epidemiológico del estado de Pará, sugiere posibles limitaciones en la detección y notificación de casos. **Conclusión:** el diagnóstico situacional evidenció que el territorio de la Unidad de Salud de la Familia Ribereña de la Ilha das Onças presenta importantes vulnerabilidades socioambientales, barreras geográficas y fragilidades estructurales que influyen en el acceso y la organización de la Atención Primaria de Salud. Los hallazgos refuerzan la territorialización como una herramienta estratégica para la planificación local y para la formulación de acciones y políticas públicas más equitativas, contextualizadas y adecuadas a las especificidades de las poblaciones ribereñas.

Palabras clave: Estrategia Salud de la Familia; Diagnóstico Situacional; Territorialización en la Atención Primaria; Atención Primaria de Salud.

Introduction

Primary Health Care (PHC) is the main entry point to the Unified Health System (SUS). Multiprofessional teams are responsible for providing continuous care to individuals and families, adapted to the characteristics of their territories[1]. In Brazil, PHC has evolved through the National Primary Care Policy (PNAB), incorporating arrangements such as the Riverside Family Health Strategy (ESFR) and the River Family Health Strategy (ESFF), which strengthen community ties and promote health education in challenging territories[2,3].

Territorialization is a pillar of PHC, enabling planning based on local demographic and epidemiological profiles and the identification of vulnerabilities[4]. In this context, situational diagnosis combines data collection, analysis, and interpretation to support preventive actions and strengthen teams' capacity to address problems by identifying cases and risks affecting families[5]. This tool is particularly relevant in riverside communities because it enables the development of tailored strategies, supported by the National Comprehensive Health Policy for Rural, Forest, and Water Populations (PNSIPCFA), established by GM/MS Ordinance No. 5.850[6]. Understanding this process in riverside settings enables the development of health promotion and intervention strategies suited to local characteristics, directly influencing management and service delivery.

Despite regulatory advances, challenges persist for Amazonian eSFR teams, including limited river access, inadequate infrastructure, and a shortage of up-to-date data, which hinder territorialization and situational diagnosis in areas such as Onças Island, in Barcarena (PA). The island lies along Guajará Bay, northwest of the capital, Belém[7]. The region is shaped by tidal patterns, while seasonal droughts and dependence on boats limit mobility for residents and health teams. In this context, Souza (2020)[2] highlights the scarcity of empirical studies on health in riverside settings, a gap that limits the development of culturally sensitive interventions and effective public management[2].

Against this background, the research question arises: how are territorialization and situational diagnosis conducted at the Riverside Family Health Unit (USFR) on Onças Island, given its epidemiological, socioenvironmental, and infrastructure conditions? Accordingly, this study aims to conduct a situational diagnosis of the unit.

Methodology

This observational, descriptive, and exploratory study adopted a quantitative approach based on documentary analysis and critical reading. Quantification provides objectivity in population measurement[8], allows characteristics to be described without researcher interference[9], and enables the exploration of primary and secondary sources[10].

The study was conducted at the USFR and covered the year 2024. The assigned riverside population comprised 2,449 people distributed across 12 microareas. The UBS provides care and assistance to communities in the following localities: Furo do Nazário I, Furo do Nazário II, Furo madre de Deus I, Furo Madre de Deus II, Piramanha Baixo I, Piramanha Baixo II, Piramanha Alto I, Piramanha Alto II, Pirarucuquara, Usina Vitória, Furo Grande, and Fé em Deus.

Sociodemographic, epidemiological, territorial, and infrastructure data were collected between August and September 2024 from individual and household registration records and reports from the Health Information System for Primary Care (SISAB/e-SUS APS) — the consolidated territory report, individual registration records, and household registration records[11] — to characterize the riverside population under study and the health team. Data were also obtained from the National Registry of Health Establishments (CNES), an official information system that records information on all health care establishments and their workforces throughout the country, regardless of their legal status (public or private) or affiliation with the SUS[12].

The inclusion criteria comprised population and epidemiological data obtained in loco from records in official systems (e-SUS APS/SISAB/CNES) for the 12 microareas within the study territory, as well as individual and household registration data covering variables such as population distribution, gender, age group, epidemiological profile and health conditions, and the community's socioenvironmental conditions. The exclusion criteria comprised epidemiological registration data containing inconsistencies resulting from outdated online records, duplicate or incomplete registrations, and data obtained directly from individuals in their homes through methods such as forms or interviews.

Population and sociodemographic data were obtained from official public sources, specifically the Brazilian Institute of Geography and Statistics (IBGE)[13] and the Ministry of Health's Primary Care Information System (SISAB)[11]. Epidemiological data were extracted from official health information systems, including the Notifiable Diseases Information System (SINAN) and SISAB, among others. Because the study used secondary, publicly available, aggregated data without personal

identifiers, review by a Research Ethics Committee was not required, in accordance with CNS Resolution No. 466/2012[14] and guidance from the Research Ethics Committee and the National Research Ethics Commission (CEP/CONEP System) concerning research using publicly available secondary data[15].

Institutional consent from the municipality was required to authorize access to the municipal Primary Health Care (PHC) network's data and services, as stipulated by current ethical standards[14,16]. Consent was granted through an official letter issued by the Primary Care Coordination, documenting the municipal administration's awareness of and authorization for the study and thus removing the need for a request under the Access to Information Law (LAI).

Following data collection, the data were organized into tables using Google Sheets, analyzed, and presented as absolute and relative frequencies. They were also compared with national data. Microsoft Excel 2023 was used to assess demographic and epidemiological profiles. Spatial analyses were conducted using Arcgis[17] Software version 3.2, Qgis[18] version 3.34, Google Earth Pro[19] version 7.3, and IBGE territorial meshes[20], producing maps of microareas, population density, and vulnerabilities.

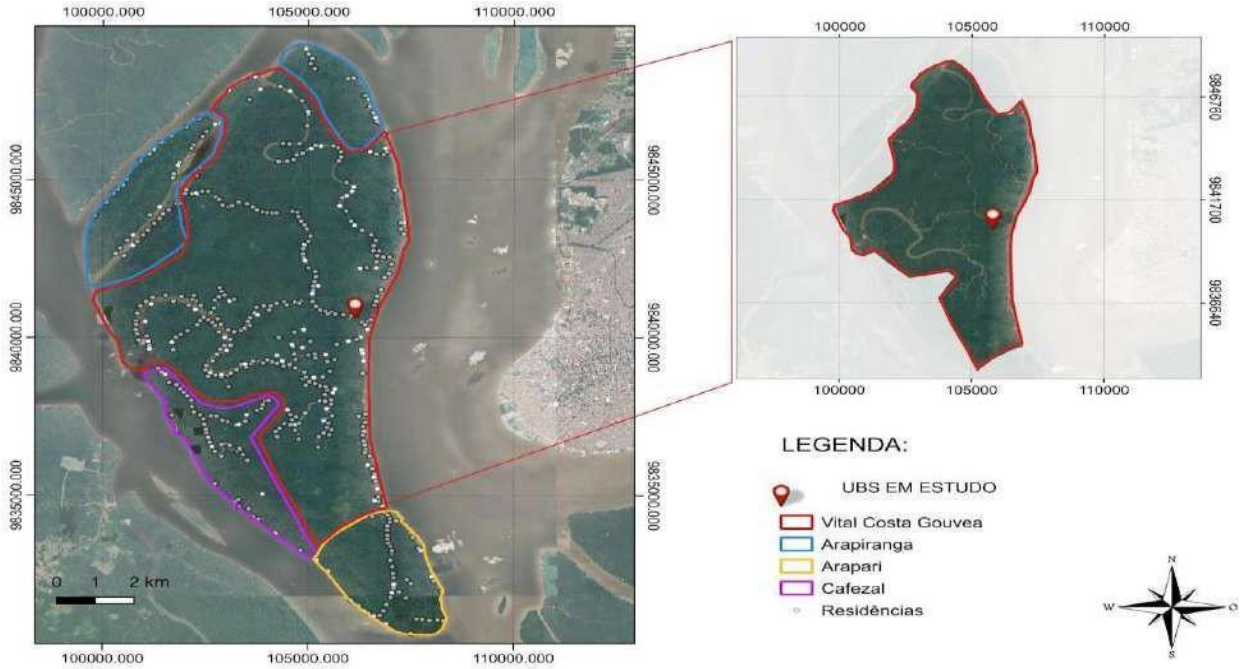
The Perplexity[21] AI tool (Perplexity AI) was used to format bibliographic references in Vancouver style and for occasional queries concerning epidemiological data from the Pará Public Health Department (SESPA), accounting for less than 5% of the manuscript. The final content was reviewed and validated by the authors.

Results and Discussion

Barcarena, a municipality in the state of Pará in northern Brazil, covers an area of 1,310.338 km² and ranks 99th in the state and 1,126th nationally, with 126,650 inhabitants[13,22]. Since April 2023, it has been part of the Belém Metropolitan Region (Belém, Ananindeua, Marituba, Benevides, Santa Bárbara do Pará, Santa Izabel do Pará, Castanhal, and Barcarena)[23]. According to the Barcarena Municipal Health Plan (PMSB) for 2022-2025[24], the municipality is administratively divided into five regions (Barcarena-seat, Murucupi, Vila do Conde, Estradas, and Ilhas).

Health care on Onças Island is organized into four coverage areas, each served by a Basic Health Unit (UBS), as shown in Figure 1. The Arapiranga UBS, located on Arapiranga Island, covers 12 microareas and serves approximately 2,101 people. The Cafezal UBS, situated in the Cafezal neighborhood, covers 10 microareas and has approximately 2,409 registered residents. The Arapari UBS, located along the road after which the Arapari neighborhood is named, covers 13 microareas and serves 4,401 registered residents[25].

Figure 1. Health care territorialization on Onças Island in 2024



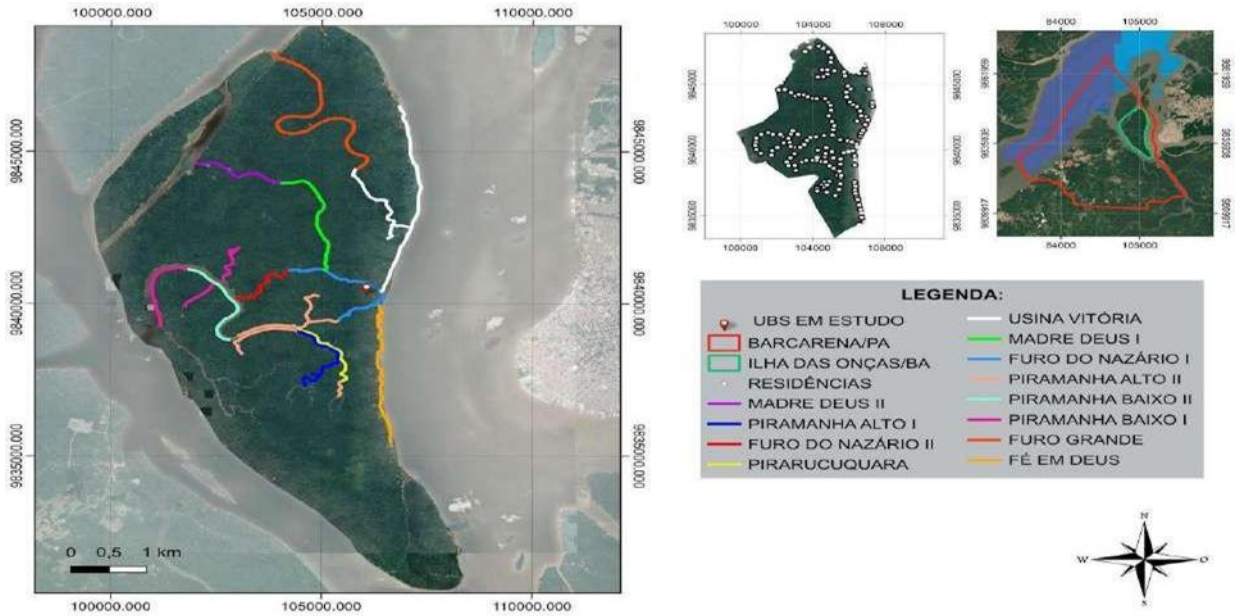
Source: Own elaboration, 2025.

The Vital Costa Gouvêa UBS, the focus of this study, is located in Furo do Nazário on Onças Island. It differs from the other units because it is the only one with a 100% riverside profile (whereas the others can be reached by both river and land routes) and serves 2,449 registered residents in 812 households. This geospatial organization reflects the region's territorial and demographic divisions, cultural characteristics, and accessibility constraints associated with its riverine and seasonal conditions. Residents depend exclusively on boats for transportation because of extreme tidal fluctuations and the physical isolation of channels and microareas during seasonal droughts. These conditions directly affect the delivery of health care and undermine equitable access.

According to Ribeiro[26], understanding a territory's challenges and potential, together with its spatial representation, provides health professionals with essential tools to organize their activities and respond more effectively to the population's needs. The author argues that geoprocessing data provide an important foundation for the strategic planning of public health actions and policies.

The Vital Costa Gouvêa Basic Health Unit covers 12 microareas in the following localities: Rio Piramanha Alto I, Piramanha Alto II, Pirarucuquara, Piramanha Baixo I, Piramanha Baixo II, Furo do Nazário I, Furo do Nazário II, Madre Deus I, Madre Deus II, Fé em Deus, Usina Vitória, and Furo Grande. Located approximately one hour from Barcarena's urban center, these communities rely exclusively on river transportation to reach the Rio Furo do Nazário Family Health Strategy services. Figure 2 shows the locations of the UBS microareas.

Figure 2. Geolocation of the UBS microareas in 2024



Source: Own elaboration, 2025.

The ESF covers 100% of the riverside population in these localities, addressing their specific needs through strategies adapted to local geographical conditions. The team relies exclusively on boats to carry out its scheduled activities and home visits, which are integral to the Family Health Strategy. These logistical challenges highlight the difficulties of providing health care in hard-to-reach regions and the importance of adequate resources to ensure the universality, equity, and comprehensiveness of services, in accordance with the principles of the Unified Health System (SUS)[27].

The Vital Costa Gouvêa UBS is registered in the National Registry of Health Establishments (CNES 3625222), is classified as a Health Center/Basic Unit providing outpatient primary care, and operates Monday through Friday, from 7 a.m. to 3 p.m.[28]. Its ESFR, ratified by Resolution No. 124[29], which changed the traditional model to a riverside model in Furo do Nazário (Barcarena-PA), accommodates riverside conditions through flexible schedules for crossing Guajará Bay[30], prioritizing safety during adverse tides and difficulties accessing microareas such as Madre de Deus I/II, Fé em Deus, and Usina Vitória during droughts.

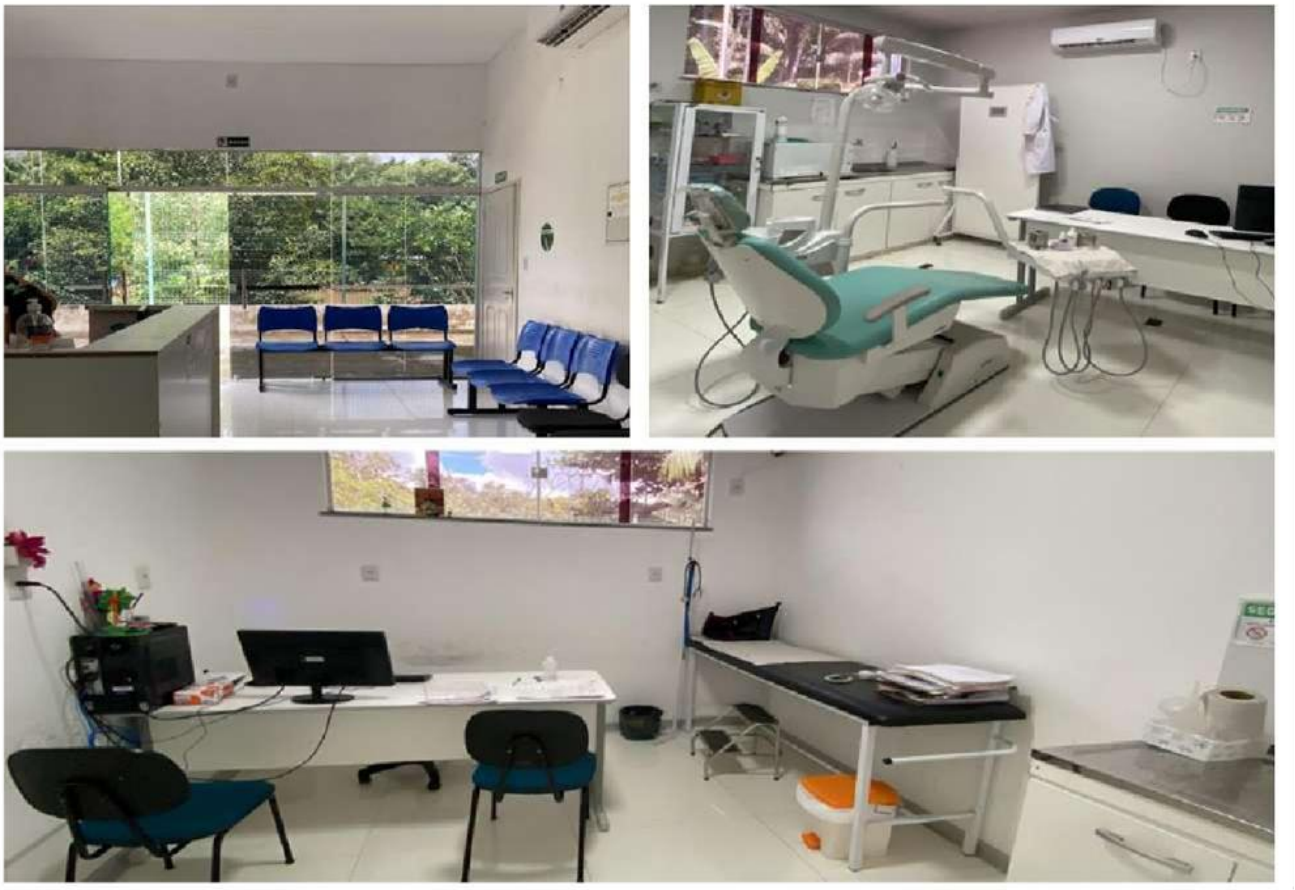
The Riverside Family Health team (eSFR) has 25 permanent professionals registered in the CNES, each with a 40-hour workweek[1]: 1 physician, 2 nurses (1 providing care and 1 providing care while also serving as manager), 4 nursing technicians, 12 Community Health Workers (ACS), 1 Oral Health Assistant (ASB), 1 dentist, and 3 administrative staff members. Additional professionals who are not registered in the CNES and whose services meet riverside needs[1,6] include 1 nutritionist (with appointments every two weeks), 1 pediatrician, 1 psychologist, and 1 social worker (with monthly appointments), as well as 1 pharmacist, 1 doorman, 1 general services worker, and 1 administrative staff member.

Community Health Workers (ACS), who are essential to Amazonian eSFR teams[31], face barriers to river access when traveling within the region. Laws No. 11.350/2006[32], No. 13.595/2018[33], and No. 15.014/2024[34] provide for transportation allowances for ACS. However, these provisions have not been effectively implemented, as the municipality has not adequately applied them or allocated the necessary funding, resulting in a shortage of suitable boats. In 2021, the

Barcarena Municipal Health Department (SEMUSB) provided boats that had to be returned because they were unsuitable. Consequently, workers must use their own or rented transportation, which disrupts the 40-hour workweek and fails to resolve the challenges of reaching the service area[33,34].

Pereira's study[35], conducted with an eSFR in the municipality of Careiro, Amazonas, indicates that, in practice, the distinction between teams formally registered under the Riverside Family Health Strategy (ESFR) and those that are not lies in the provision of essential supplies, such as materials and fuel, to formally recognized teams. The UBS examined in this study lacks a regular electricity supply and relies on a generator at the neighboring municipal school through an agreement between the Municipal Health Department (SEMUSB) and the Municipal Education Department (SEDUC). Nevertheless, its infrastructure meets the Ministry of Health's Type I UBS standard[36]. The unit's floor plan is documented in the executive project's descriptive report[37], as shown in Figure 3, although electricity is supplied irregularly by the neighboring school's generator.

Figure 3. Facilities at the Vital Costa Gouvêa UBS



Source: Own elaboration, 2025.

Barcarena's urgent and emergency care network includes Wandick Gutierrez Hospital (11.81 km from the UBS), the Vila dos Cabanos Emergency Care Unit (UPA) (19.43 km), and Dr. Afonso Rodrigues de Almeida Neves Hospital and Maternity Hospital (HMARAN) (19.47 km). Access to specialized services is regulated by the National Regulation System (SISREG). The Barcarena Specialized Outpatient Unit offers specialist consultations, but travel distances hinder access for riverside residents, prompting them to seek care at facilities in the capital — Jurunas UPA, Mário Pinotti Emergency Room, and PIO XII Hospital—which are closer to the microareas.

The concentration of services in urban areas is supported by recent studies. For example, Almeida et al.[38] examined access to urgent and emergency care among riverside populations in Maués, Amazonas, and documented long river journeys between communities and the municipal center. Garnelo et al.[39] also demonstrated the financial costs these populations incur to access specialized care, even when closer riverside facilities are available. Geographical dispersion, financial barriers, and long river journeys (sometimes lasting days) encourage riverside residents to seek care in Belém, compromising equity[40]. The Vital Costa Gouvêa UBS illustrates local adaptations despite challenges related to electricity and transportation for ACS[41], while also highlighting the need for decentralization[1,6].

According to SISAB data, the registered population comprises 48.06% (1,177) females and 51.93% (1,272) males, indicating a relatively balanced gender distribution. These findings differ from those of a 2023 study[42] conducted in a riverside community in the Transamazonian and Xingu River region, where women accounted for approximately 56% of the population.

Table 1 presents the age distribution of people registered at the UBS. The 0–4-year age group comprised 192 children, including 90 boys and 102 girls. This relatively small number may be associated with family planning initiatives under the Women's Health Program[43]. A study conducted in a riverside community along the Madeira River in Amazonas[44] identifies other possible reasons for this reduction: 56.4% of mothers reported that it was associated with factors such as poor socioeconomic and sanitation conditions and limited access to health services.

Table 1. Age distribution of people registered at the Vital Costa Gouvea UBS, 2025

	TOTAL	**PERCENTAGE (%)**
< 1 year	38	1.55%
1 to 4 years	154	6.29%
5 to 9 years	193	7.88%
10 to 14 years	222	9.06%
15 to 19 years	235	9.60%
20 to 59 years	1396	57.00%
> 60 years	211	8.62%
	2,449	100%

Source: Own elaboration, 2025.

The 10–14-year age group comprised 222 individuals, including 122 boys and 100 girls. Specific services, such as the Adolescent Health Program, are available, with care provided weekly. The Ministry of Health emphasizes the importance of training professionals to address the specific needs of this population and ensure adequate access to Primary Health Care (PHC), particularly for unscheduled consultations[45,46].

The 15–19-year age group comprised 235 individuals, with a slight predominance of females (123 women and 112 men), possibly related to male migration in search of better employment opportunities. This finding contrasts with the pattern described by Lobão[47], who identified greater

migration by young women to urban areas because of limited educational opportunities and formal employment in their communities.

The largest age group was that of adults aged 20–59 years, comprising 1,396 individuals (725 men and 671 women), indicating a predominance of people of working age. This demographic profile suggests a substantial workforce with the potential to support local economic development, provided that appropriate public policies are implemented[48].

The older population comprises 211 individuals (120 men and 91 women), in contrast to the national trend toward the feminization of aging[49]. According to the 2022 Population Census[13], the population aged 65 years or older increased by 57.4% over 12 years, reaching 22.2 million people (10.9% of the total population), compared with 14 million (7.4%) in 2010.

The main findings in the epidemiological profile of the registered population were alcohol use, reported by 10.69% (262); Systemic Arterial Hypertension (HAS), reported by 9.92% (243); and smoking, reported by 3.83% (94). These conditions and risk factors require culturally adapted interventions in riverside populations[50]. This profile is consistent with the national increase in Chronic Noncommunicable Diseases (DCNT), which affect 1 in every 3 Brazilians and account for 70% of deaths, with a greater impact on vulnerable populations[5,51].

Regarding illicit drug use, 13 individuals (0.53%) require preventive monitoring. At the UBS, scheduled consultations for DCNT and group Hiperdia consultations (with weekly walk-in appointments) help expand access, provided that regional planning is adequate[52]. The analysis of UBS data therefore identifies modifiable risk factors — such as alcohol and tobacco use, physical inactivity, and an inadequate diet — associated with DCNT (e.g., HAS) as major concerns. These factors, for which there is no safe level of consumption[51], may be reduced through interventions addressing social determinants[53].

No cases of leprosy were reported at the UBS, in contrast to national epidemiological data classifying the North region as having a "very high" detection rate (18.53 to 39.62 cases per 100,000 inhabitants, depending on the period analyzed), approaching the hyperendemic threshold (≥40.00/100,000 inhabitants) defined by the Ministry of Health[54]. At the national level, however, leprosy cases declined by 28.9% between 2013 and 2022, according to the 2024 Epidemiological Bulletin[3]. The UBS recorded only one case of tuberculosis, in contrast to the national situation described in the Panorama of Tuberculosis in Brazil[54]. According to the 2024 epidemiological bulletin, the tuberculosis incidence rate in 2023 was 37 cases per 100,000 inhabitants, underscoring the persistence of the disease as a public health concern.

The contrast between the high incidence of tuberculosis in Pará (48.8 cases per 100,000 inhabitants), which is among the 11 most affected states[55], and the low number of cases registered at the Vital Costa Gouvêa UBS (0 or minimal, according to local data) suggests either underreporting or effective local disease control, warranting further investigation. This apparent discrepancy, compared with the national figure of 37.0+/ 100,000[56], reinforces the need for coordinated early diagnosis and prevention efforts that take riverside social determinants, such as limited river access, into account.

In the area of mental health, 24 were registered in e-SUS Território, an application used by Community Health Workers (ACS) to record self-reported health conditions during individual registration of the population assigned to the territory. This figure points to similar challenges in record-keeping and highlights the need to prioritize team training and coordination with the Psychosocial Care Network (RAPS) for vulnerable populations[56]. When specialized follow-up is

needed, patients are referred to the municipality's Psychosocial Care Center (CAPS), located more than 12 kilometers from the territory. Several factors may contribute to low adherence to treatment, including geographical barriers that impede access to services, stigma and prejudice related to mental disorders that may discourage people from seeking help, and cultural factors that influence how mental health conditions are understood and accepted[57].

During the study period, 12 pregnant women were registered. Despite the riverside setting, no cases of adolescent pregnancy were recorded, which may indicate the effectiveness of sex education initiatives targeting this population. This finding contrasts with the study by Cabral et al.[58], conducted among riverside women in the state of Amazonas, which reported a high rate of early pregnancy.

With regard to income transfer policies, 438 families covered by the ESFR were beneficiaries of the Bolsa Família Program (PBF), equivalent to 50% of the families registered in the microareas. This finding reveals gaps in program coverage, as almost half of the households served by the UBS do not receive the benefit, despite social vulnerability and a lack of sanitation. These findings suggest persistent gaps in the registration and updating of records for riverside families in the Unified Registry (CadÚnico)[59].

Expanding the PBF's intersectoral coverage in the territory is essential because the program's health-related conditionalities (weighing, childhood vaccination, and prenatal monitoring) help strengthen community engagement with primary care and improve maternal and child health indicators, as recommended by the National Primary Care Policy[1]. The 5 cases of Chagas Disease (DC), a Neglected Tropical Disease (DTN), recorded at the UBS in 2024 contrast with the endemic situation in Pará (475 confirmed cases in the state through SINAN/SESPA, including 39 in Barcarena), associated with oral transmission through contaminated açaí, a staple food in riverside communities[60]. This discrepancy suggests possible underreporting (associated with precarious housing, inadequate sanitation, and limited river access) or ineffective local diagnosis, exacerbated by socioenvironmental factors such as environmental degradation and migration[61].

The UBS catchment area has 812 registered households without basic sanitation, piped water, electricity, internet access, or adequate waste disposal and collection. According to e-SUS Território reports[62], waste is burned or buried in 710 households (87.43%) and discarded in the open in 21 households (2.58%). The remaining households did not clearly indicate their waste disposal methods: 35 (4.31%) were classified as unspecified and 46 (5.66%) under another category.

There is no waste collection service in the unit's catchment area, directly affecting the environment and, consequently, the quality of life of local residents, who depend on natural resources for their livelihoods. In this context, Ribeiro et al.[63] studied riverside residents of Itaúna Island, in the municipality of Cametá, Pará, examining community profiles and quality of life. They found that residents recognize the importance of selective waste collection; however, because the service is unavailable, burning waste is often considered the most practical disposal option.

Regarding water consumption, most households — 797 (98.2%) — obtain drinking water through the Barcarena water supply system. Boat operators collect the water and deliver it to households once a week. Quantities vary by carrier, but each family receives at least 100 liters. The water comes from wells and is chlorinated by the municipal water supply system. In addition, 8 households (0.9%) use bottled water, 3 households (0.3%) use boiled water, another 3 (0.3%) use filtered water, and 2 (0.2%) use untreated water.

Consistent with these findings, Mendonça et al.[64] discuss difficulties in accessing water in northern Brazil, where the lack of adequate drinking water supply systems in Amazonian riverside communities is a longstanding problem that substantially affects residents' quality of life. This situation is paradoxical: although water is abundant in floodplain areas because of rivers and frequent rainfall, many residents still lack access to safe water. This lack of access contributes to waterborne diseases, as demonstrated by Zaramella et al.[65] in the municipality of Altamira, Pará.

Basic sanitation plays a crucial role in health promotion, education, and environmental preservation. In the state of Pará, deficiencies in these services are widely recognized. Data from e-SUS Território[62] show several forms of household sewage disposal: 340 (41.9%) use rudimentary septic tanks; 281 (34.6%) use other disposal systems; 171 (21.1%) discharge sewage in the open; 12 (1.5%) discharge it directly into rivers; and 8 (1.0%) did not report a disposal method. These figures reflect structural shortcomings in basic sanitation and the risks they pose to public health and the environment.

A large proportion of household waste is disposed of in rudimentary septic tanks or open areas, highlighting the urgent need for public policies that promote universal access to basic sanitation and improve water resource management in the region. These findings are consistent with previous studies on basic sanitation, such as that by Prata et al.[66], which emphasizes the need for selective collection and improved waste management to minimize environmental impacts, raise awareness of associated risks, and improve service delivery. Similarly, Batista et al.[67] highlight persistent deficiencies in water supply in northern Brazil and the risks associated with inadequate infrastructure.

As Tavares[68] notes, inadequate sanitation in riverside communities, combined with limited awareness of its social and environmental importance, contributes to the exclusion of vulnerable groups and restricts their understanding of the rights to health and a healthy environment. The author emphasizes that policies integrating sanitation initiatives and environmental education can mitigate adverse effects on public health and the environment, thereby improving living conditions in these communities.

Final Considerations

The situational diagnosis of the Riverside Family Health Unit on Onças Island revealed a territory characterized by high socioenvironmental vulnerability, geographical dispersion, dependence on river transportation, and structural weaknesses that directly affect access to and the organization of health care. Significant gaps remain in the reporting of health conditions, access to specialized services, and the coverage of public policies in the territory.

The analysis revealed a predominance of working-age adults, the presence of chronic health conditions, and inadequate sanitation, water supply, and waste management. Together, these conditions call for intersectoral responses and territorial planning tailored to riverside communities. The geographical, social, economic, and cultural characteristics of these communities require context-sensitive care models guided by territorialization and an understanding of local vulnerabilities to overcome access barriers and ensure equitable, comprehensive, and culturally appropriate care.

The findings reinforce the importance of territorialization and situational diagnosis as strategic tools for guiding Primary Health Care activities, strengthening local planning, and supporting more equitable and effective interventions. The results are intended to inform management of the Vital Costa

Gouvêa UBS and the development of public strategies that promote universal access to quality health care and reduce structural inequalities.

The study's limitations include the use of secondary data, the possibility of incomplete records in information systems, and the absence of a qualitative approach, which restricted a more detailed understanding of the experiences of service users and health workers. Future studies should adopt mixed methods, extend the investigation to other riverside communities, and examine more closely the effects of territorial organization on access, continuity of care, and health outcomes.

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Authors' contributions

M.A. Lima: conception/design of the article, data analysis and interpretation, and writing of the article.
Y.M.M. dos Santos: conception/design of the article, data analysis and interpretation, and writing of the article.
A.J.N. Freitas: data analysis and interpretation.

T.M. Goes: conception/design of the article, data analysis and interpretation, writing of the article, critical review of its content and approval of the final version of the article.

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