

SEXUAL AND REPRODUCTIVE HEALTH OF RIVERINE WOMEN IN THE MIDDLE SOLIMÕES RIVER  
REGION, WESTERN AMAZON

SAÚDE SEXUAL E REPRODUTIVA DE MULHERES RIBEIRINHAS NA REGIÃO DO MÉDIO RIO  
SOLIMÕES, AMAZÔNIA OCIDENTAL

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**ABSTRACT**

In Brazil, there is a noticeable lack of information regarding sexual and reproductive health (SRH), especially concerning isolated populations such as those found in riverine communities in the interior of the state of Amazonas. Faced with this gap, the present study aimed to understand the socio-demographic and economic profile, as well as the sexual behavior and reproductive health of women in a riverine community in the Amazon. It is non-participatory research with a quali-quantitative approach, characterized by an exploratory, descriptive and retrospective design. The results were structured into three axes, exploring socio-demographic and economic information, sexual behavior and reproductive health, and reveal alarming situations related to food security and health risks. These concerns are exacerbated by low family income and the precariousness of health services in the region. Given these negative findings, particularly regarding the health of riverine women, it is crucial to promote the development of reproductive health programs that take into account the specific social and cultural conditions of isolated communities in the Amazon.

**Keywords:** Amazon. Riverine communities. Sexual behavior. Women's health. Family health.

**RESUMO**

No Brasil, é notável a carência de informações sobre saúde sexual e reprodutiva (SSR), especialmente quando se refere a populações isoladas, como as encontradas nas comunidades ribeirinhas no interior do Estado do Amazonas. Diante dessa lacuna, o presente estudo teve como objetivo compreender o perfil sociodemográfico e econômico, além do comportamento sexual e saúde reprodutiva das mulheres em uma comunidade ribeirinha na Amazônia. Trata-se de uma pesquisa não participativa, com uma abordagem quali-quantitativa, caracterizada por um desenho exploratório descritivo e retrospectivo. Os resultados foram estruturados em três eixos, explorando informações sociodemográficas e econômicas, comportamento sexual e saúde reprodutiva, e revelaram situações alarmantes ligadas à segurança alimentar e aos riscos para a saúde. Essas preocupações são

agravadas pela baixa renda familiar e pela precariedade dos serviços de saúde na região. Diante dessas constatações negativas, sobretudo em relação à saúde das mulheres ribeirinhas, é crucial promover o desenvolvimento de programas de saúde reprodutiva que levem em conta as condições sociais e culturais particulares das comunidades isoladas da Amazônia.

**Palavras-chave:** Amazônia. Comunidades ribeirinhas. Comportamento sexual. Saúde da mulher. Saúde da família.

## INTRODUCTION

In Brazil, throughout the first half of the 20<sup>th</sup> century, attention focused on the well-being of mothers and children acquired a dimension of relevance for both society and the State (Castro, 2015). Currently, sexual and reproductive health (SRH) is under the supervision of the State and is supported by several laws and health programs that exist exclusively for the care and protection of women, children and adolescents (MS, 2013).

However, the territorial extension and heterogeneity in the socio-economic characteristics of the different regions are significant obstacles that hinder quality health services. According to Cabral; Cella; Freitas (2019), due to these particularities, there is little information about the SRH of isolated peoples, especially riverine populations in the northern region.

In the Amazon, the interaction between the forest and man is practically inseparable, especially in traditional communities, where knowledge evolves in harmony with nature, and the survival of both is intrinsically intertwined through wisdom, culture and tradition (Cabral; Cella; Freitas, 2020). However, these populations, who live on the banks of rivers, face significant challenges, such as geographical barriers and the precariousness of necessities such as basic health units and schools, sanitation, electricity supply, water supply and internet access (Souza and Cortes, 2024; Ruzany; Moura; Meirelles, 2012). These problems intensify in certain periods due to the variation in river water levels, which can be aggravated by extreme weather events, such as the great drought that affected the region in 2023 and 2024, which severely hinder physical access to the areas and compromise the supply of basic items such as food and drinking water.

Faced with this scenario, it is essential to have an in-depth understanding of the socio-economic aspects, together with the analysis of indicators that make it possible to assess the quality of SRH. This understanding can play a crucial role in improving the formulation of public policies with targeted and assertive measures in the scope of health for specific groups (Parmejiani *et al.*, 2021).

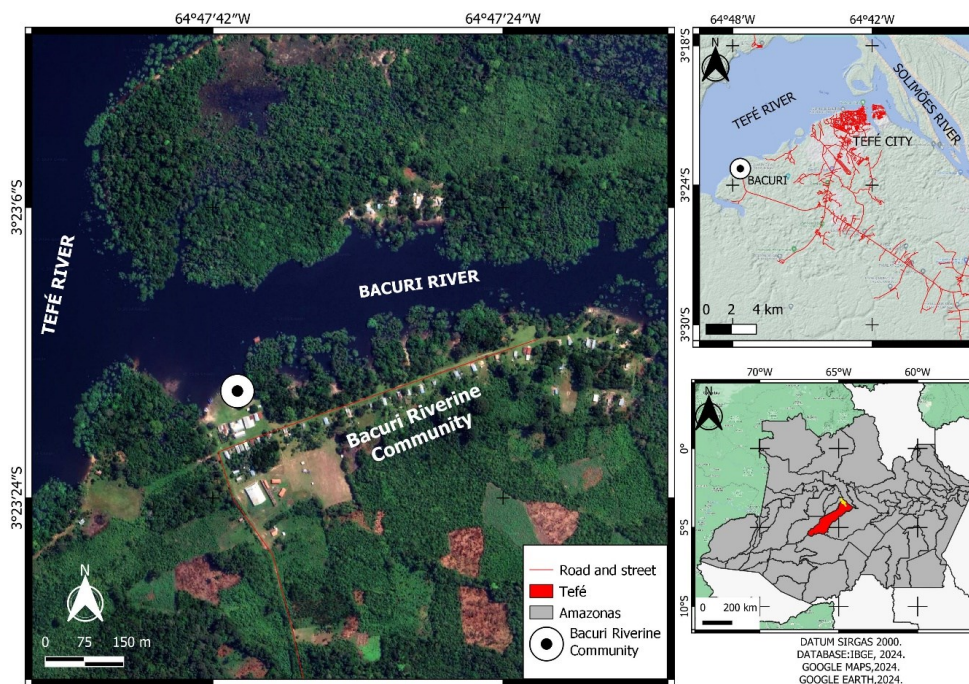
Thus, this study aims to elucidate the socio-demographic and economic profile, as well as the sexual behavior and reproductive health situation of women living in a riverine community of the middle Solimões River, in the western Amazon. Understanding these aspects is fundamental for the development of effective strategies for health promotion in primary health care (PHC), especially given the particularities of sexual and reproductive health (SRH) in traditional and riverine communities of the Amazon.

## METHODOLOGY

### *Study location and design*

This is an observational, cross-sectional study with a qualitative and quantitative approach (Amador *et al.*, 2022), which is characterized as exploratory (Sousa and Cortes, 2024), descriptive and retrospective (Cabral; Cella; Freitas, 2020), and was carried out in December 2022 with riverine women who are residents of the Bacuri community, Tefé, Amazonas (Figure 1).

Figure 1 – Map of the state of Amazonas, highlighting the municipality of Tefé, Amazonas, Brazil.  
Bacuri community on the banks of Lake Tefé



Source: Authors, 2024.

The community chosen for this study has an estimated population of 325 inhabitants, which make up 79 families. Their means of subsistence are diversified and comprise activities such as fishing, hunting, extractivism and family farming, with a particular emphasis on cassava plantations for the production of cassava flour (Figure 2). It is an isolated village and presents some of the peculiar characteristics of the Amazonian peoples, which are related to ancestral traditions and cultural manifestations, with little interference from urban centers, thus justifying the relevance of this location for the study in question.

Figure 2 – Front view of the Bacuri community, Tefé, Amazonas, Brazil



Source: Authors, 2024.

To select the participants, the following criteria were taken into account: age equal to or over 18 years (legal age of majority in Brazil), history of pregnancy, and having been a resident in the community for more than ten years. Women who did not meet these criteria were excluded from the sample.

The sample size was calculated based on the number of homes (55). The approach prioritized at least one interview per household. Out of a total number of eligible women (40), the number of adult women who accepted the invitation to participate in the study was (35), i.e., 63.6% of the households.

### **Data collection**

Data were collected using a semi-structured interview form containing 28 questions (objective and discursive), which were distributed in three main axes: socio-demographic and economic information, sexual behavior and reproductive health. The form was filled in by a single qualified researcher. The information acquired was organized and tabulated in an Excel 2021® spreadsheet. The results were presented in graphs and tables in the form of absolute numbers and percentages.

### **Ethical aspects**

Regarding the ethical aspects, the participants received detailed information about the purpose and confidentiality of the information provided. After clarification, those who accepted the invitation to participate in the study formalized their participation by signing the informed consent form.

Subsequently, the location of the interviews was the participant's own home, and the interview was conducted individually, thus ensuring secrecy, confidentiality, and security in the processing of the collected data. This approach respects the principles established by National Health Council Resolution No. 466, of December 12, 2012, regarding the preservation of the privacy of the content. The present study was approved by the Research Ethics Committee of the Amazonas State University.

## **RESULTS AND DISCUSSION**

When analyzing the socio-demographic aspects of the group of women interviewed ( $n=35$ ), which had an average age of 39.1 ( $\pm 16.5$ ) years, varying between 18 and 90 years, a notable predominance of brown ethnicity stands out (94.3% of the participants). In regard to marital status, the majority (77.1%) were married or in another form of civil union. Regarding education, 60% said they had completed high school and, in terms of family income, 48.6% reported surviving on less than one minimum wage (MW) and 25.7% on only one MW (Table 1). Low family income can compromise the food security of families and pose health risks to pregnant women and children, especially considering the high energy demand of these phases of life. Good quality food is fundamental in order to ensure healthy development, and family income has a direct influence on this (Pinto et al., 2020).

When we examine income up to one MW, it is clear that 74.3% of families in this community face profound social disparities, especially when contrasted with the national average, which currently exceeds two MWs (IBGE, 2023). Regarding the disparity between education and per capita income, it can be considered that women in the Bacuri community, as in the state of Amazonas as a whole, experience problems such as the lack of qualified work opportunities in the region, where professional qualification and education are not converted into income, a situation that has hindered the improvement of the socio-economic conditions of the community.

Although it is known that family income is substantially low in virtually all the riverine communities in the state of Amazonas (Gama *et al.*, 2018; Piperata *et al.*, 2011). According to IBGE (2022), the monthly household income per capita in the state of Amazonas was R\$ 965 ( $\approx$ 182 dollars at the time of the research). Among all the states of Brazil, including the Federal District, Amazonas occupied penultimate position in the national ranking in relation to monthly household income per capita. The basic nutritional needs for survival of these traditional peoples are supplemented by extractivism (fruit collection, hunting and fishing) (Cabral; Cella; Freitas, 2020), in addition to the consumption of the cassava flour made by them.



Table 1 – Socio-demographic and economic profile of riverine women in the Bacuri community, Tefé, Amazonas, Brazil

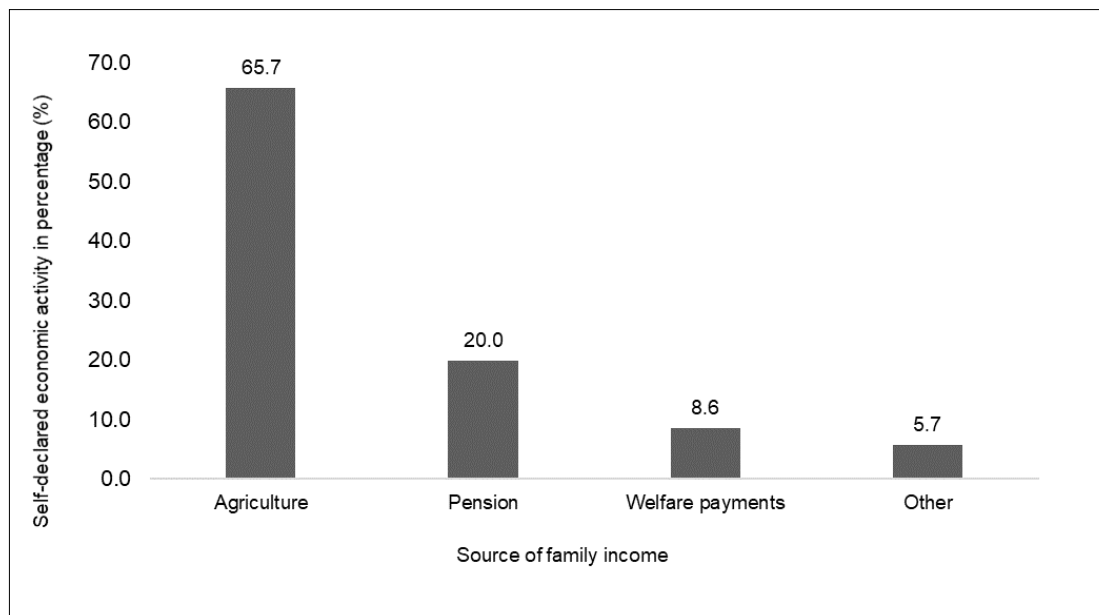
Variable	N	Percentage (%)
<b>Ethnicity</b>		
White	1	2.9
Brown <sup>(a)</sup>	33	94.3
n. i.	1	2.9
<b>Marital status</b>		
Single	8	22.9
Married	12	34.3
Other	15	42.9
<b>Education</b>		
Illiterate	2	5.7
ES incomplete	7	20.0
ES complete	2	5.7
HS incomplete	2	5.7
HS complete	21	60.0
University education	1	2.9
<b>Family income <sup>(b)</sup></b>		
≤ 1 minimum wage	17	48.6
1 minimum wage	9	25.7
2-3 minimum wages	4	11.4
≥ 4 minimum wages	1	2.9
Preferred not to answer	4	11.4

<sup>(a)</sup> mixed-race women; n. i. = not informed; ES = elementary School; HS = high school; <sup>(b)</sup> The value of the minimum wage in the year of the research was R\$1,212.00 (US\$ 228,67).

Source: Authors, 2024.

The predominant economic activity was family farming, representing 65.7% of all the activities found (Figure 3), with an emphasis on the artisanal production and sale of cassava flour. It is important to highlight the significant participation of women in this sector of agriculture, since it can be observed that women play a key role in all stages of the process, from planting, weeding and harvesting cassava to the activities involved in the making of cassava flour, such as peeling the roots, pressing, grinding, as well as sifting the flour before roasting and after it has been cooked. This fact is corroborated by a study conducted by Sanches *et al.* (2022), which highlights the highly relevant role played by riverine women in agriculture.

Figure 3 – Main source of family income declared by riverine women, residents of the Bacuri community, Tefé, Amazonas, Brazil



Source: Authors, 2024.

Furthermore, 91.4% of women stated they had worked during all their gestational periods. Some even reported having worked on the day they gave birth. When they returned home, at the end of the day, they began to feel the pain of contractions, which proves the importance of women in work activities to make up the family income.

Regarding the second axis, "sexual behavior", it is observed that the majority of women (51.4%) have had only one sexual partner and 35.6% of them are involved in relationships that have last for more than 10 years. These results are similar to those of the studies conducted by Cabral; Cella; Freitas (2020) in riverine communities in the middle Solimões River region.

When asked whether all their pregnancies were intentional, the majority (54.0%) responded negatively, showing that there was no consensus between the couple on family planning. Even so, 51.4% declared that they did not use contraceptive methods (CMs), with 27.8% disliking it and 22.2% claiming that they had never received adequate guidance regarding it. Among women who adopted some form of CM, female sterilization, known as tubal ligation, stands out for being used by 52.9% of the respondents (Table 2).

Among the sterilized women, only 33.3% stated that they had made the decision on their own initiative. In the other cases 66.7%, it was not possible to clarify the motivation, since the participants chose not to answer. It is important to emphasize that all sterilizations occurred at the time of the most recent birth and that the average number of children per woman in this group was 6.2, which suggests a decision that may well be influenced by medical advice. In addition, the scarcity of information from a qualified source on reproductive planning, associated with limited access to alternative contraceptive methods, may have contributed to the adoption of tubal ligation in contexts of informational vulnerability.

Table 2 – Sexual behavior of riverine women from the Bacuri community, Tefé, Amazonas, Brazil

Variable	N	Percentage (%)
<b>Number of partners</b>		
> 1 partner	17	48.6
Only 1 partner	18	51.4
<b>Was pregnancy planned? <sup>(a)</sup></b>		
Yes	75	46.0
No	88	54.0
<b>Uses contraceptive methods?</b>		
Yes	17	48.6
No	18	51.4
<b>Reason for not using contraceptive methods</b>		
Don't know how to use it/never had guidance	4	22.2
Do not like to use it	5	27.8
Preferred not to answer	9	50.0
<b>Type of contraceptive method used</b>		
Pill	1	5.9
Male condom	3	17.7
Injection	4	23.5
Female sterilization	9	52.9

<sup>(a)</sup> The (n) considered is the total sum of pregnancies among all women (n = 163); n. i. = not informed.  
Source: Authors, 2024.

These indicators reveal a substantial deficiency in health education, particularly in the field of sexual and reproductive health (SRH). These aspects seem to be neglected both in schools and in the dynamics of riverine families in the interior of the state of Amazonas, which can be explained by the lack of knowledge on the part of many women about CMs and the importance of condom use. This deficiency is aggravated by the shortage of qualified professionals in the areas of health and education, in addition to a series of adversities and restrictions that compromise healthcare in these locations. Among the main challenges faced, the issue of mobility stands out, since it is strongly compromised by large geographical distances between cities, with almost exclusive dependence on river transport (Sousa and Cortes, 2009; Parmejiani et al., 2021). In the Amazon, this modality presents serious limitations in terms of efficiency, resulting in long, time-consuming and costly travel. Added to this is the precariousness of the services available, which further aggravates the mobility difficulties faced by the population. Although present in some locations, regional air transport remains accessible only to the most privileged people, due to extremely high costs.

The lack of comprehensive information in the school environment regarding sexual health can cause the women to become vulnerable to a wide range of health risks (Oliveira and Lanza, 2018). In particular, risks involving sexually transmitted infections (STIs), given the relatively low adherence to the use of condoms, which is only 17.7%. This was also evidenced by Oliveira *et al.*, 2011) in their study carried out in riverine communities. This lack of use of condoms may be associated with issues of discomfort and concern about the reduced pleasure during sexual intercourse (Parmejiani *et al.*, 2021).

Furthermore, Silva; Lopez; Muniz (2005) highlights the complexity associated with acquisition of condoms, whether through direct purchase or via government distribution through health clinics. In this context, more in-depth and detailed research is needed to understand the real reasons for low acceptance. Based on this, it will be possible to seek improvements in distribution and, especially, in health education activities in these communities.

Given these counterproductive findings regarding the health of riverine women in the state of Amazonas, it is essential that public authorities significantly expand the work of riverine family health teams and/or fluvial family health teams in line with the school health program, in view of the vast area involved and the high demand of these populations. This can ensure a more consistent presence of health authorities in communities far from urban centers, replacing sporadic actions based on curative medicine with educational and preventive actions, through the family health strategy (Gama *et al.*, 2018).

However, it is imperative to recognize and respect the peculiarities associated with the social and cultural conditions of these isolated communities in the Amazon region, where access to and use of health services is strongly influenced by the local way of life (Sousa and Cortes, 2024). These influences include traditional practices such as the use of medicinal plants, beliefs about the consumption of certain foods, and reliance on local unqualified experts, holders of traditional knowledge such as healers, shamans, witchdoctors, faith healers, sorcerers, midwives, and elders (Fraxe; Pereira; Witkoski, 2007). However, it is crucial to recognize the limited understanding of these local particularities, which demand more in-depth studies that address these phenomena in a holistic manner.

With regard to the third axis, which addresses reproductive health (Table 3), it is observed that the women of the Bacuri community have an average parity of 4.6 children, and the fertility rate stands out significantly compared to the national average of 1.7 children (IBGE, 2025). It is worth mentioning that 14.3% of the women in this community have more than 10 children.

At the same time, it is also observed that 14.3% of women have only one child; however, it is important to highlight that all these women (100%) of single parity are still of reproductive age, with 80.0% of them being on average of 24 years of age. In other words, they are at the beginning of their reproductive trajectory and will probably expand their number of offspring throughout their reproductive cycle. High rates of prolificacy and unplanned pregnancies are closely related to the organization of local economic and cultural production, particularly concerning territorial ownership, as discussed by Moura (2005). It must be highlighted that family planning should not be an imposition of public policies, but rather an inalienable right.

Regarding miscarriages, 31.4% of those interviewed reported occurrences of pregnancy termination, with 27.3% reporting having experienced two or more miscarriages. Notably, according to the reports collected, only one case was identified as resulting from a voluntary interruption (abortion).

An additional concern is that, in 43.8% of miscarriages, there was no medical assistance before or after the episode, which demonstrates the vulnerability of these women's SRH, and puts their lives at risk. According to Fleischer (2012), it is necessary to understand the primary reasons for miscarriages among riverine and Amazonian women so that their reproductive rights and the services offered by the Unified Health System (SUS) can be democratized.

Regarding the type of birth, one notable fact is that 95.1% of women underwent a normal (vaginal) birth. However, it is crucial to highlight that all of them went through at least one natural birth, except for a single woman who, in her three pregnancies, although this was not her choice, was determined to have a cesarean section based on medical recommendations.

Even with the recent initiatives by the Ministry of Health (MS), which prioritizes humanization actions and encourages natural childbirth, these numbers still stand out significantly concerning the national average. In 2021, natural births were recorded at a rate of 42.9% in Brazil, and in some states, such as Rondônia and Goiás, this rate reached even lower levels with only 32% (MS, 2023). This reinforces the importance of respecting the cultural particularities of the Amazonian people, especially when we observe that 71.2% were optional, reflecting individual choices rooted in cultural practices.

According to Cella and Marinho (2017), in a study carried out in Tefé, a municipality in the Middle Solimões River region, the frequency of natural births among riverine women in the Amazon may be associated with a cultural meaning attributed to pregnancy. These women consider cesarean section as something associated with "weak women". From this perspective, they feel the need to experience natural childbirth, experiencing and/or facing pain, and understand in fact that this physiological process is healthier for both the mother and the child (Velho *et al.*, 2012). This aspect is deeply rooted in Amazonian culture, being recurrent even among young women and residents in urban areas; and is influenced by the diversity of cultural traits that characterize the Amazon region.



Table 3 – Reproductive health: gestational indicators of riverine women in the Bacuri community, Tefé, Amazonas, Brazil

Variable	N	Percentual (%)
<b>Parity</b>		
1 child	5	14.3
2-5 children	20	57.1
6-9 children	5	14.3
≥ 10 children	5	14.3
<b>History of miscarriage</b>		
Yes	11	31.4
No	24	68.6
<b>Number of miscarriages</b>		
1 miscarriage	7	63.6
2 miscarriages	1	9.1
≥ 3 miscarriages	2	18.2
n. i.	1	9.1
<b>Type of abortion/miscarriage</b>		
Induced	1	6.3
Spontaneous	14	87.5
n. i.	1	6.3
<b>Received medical help with miscarriages?</b>		
Yes	8	50.0
No	7	43.8
n. i.	1	6.3
<b>Type of birth <sup>(a)</sup></b>		
Caesarean section	8	4.9
Vaginal	155	95.1
<b>Place where birth occurred <sup>(b)</sup></b>		
Hospital	69	42.3
Home	94	57.7
<b>Was a choice of the location and type of birth given? <sup>(c)</sup></b>		
No	27	16.6
Yes	116	71.2
n. i.	20	12.3

(a, b e c) The (n) considered is the total sum of pregnancies among all women (n = 163); n. i. = not informed.  
Source: Authors, 2024

A fact that corroborates the assertions of Moura (2005) that pregnancy and the postpartum period in this region are surrounded by social and cultural meanings. Among the meanings, we have dietary restrictions on certain foods during pregnancy and postpartum, as well as prayer rituals and blessings for the cure of various types of problems related to the mother-child binomial, such as “evil of the seventh day, displaced mother of the body, evil eye, fallen wind and envy, among other cultural diseases” (Fraxe; Pereira; Witkoski, 2007; Tassinari, 2021; Velho *et al.*, 2012), in which precise identification of these nosographies are often impossible to describe.

In addition, it is essential to mention that women in these communities play a fundamental role in the family economy. The choice for natural childbirth is crucial, as it allows them to return to labor activities more quickly.

This highlights the need for more studies involving these traditional peoples to understand their real needs and thus assist the government in the development of reproductive health programs that consider the geographical, social and cultural peculiarities of the Amazonian riverine communities.

It is also undeniable that this type of birth is more frequent in the low-income population, as found in studies carried out in the central-western region of Brazil (Giglio; França; Lamounier, 2011). This confirms that, most of the time, these women do not even have options to choose from, which is evident in this study when investigating the variables of childbirth. In this sense, Oliveira *et al.* (2022) defend a more comprehensive primary care (PC) model that considers local particularities.

When examining the distribution of births by location, we found that 57.7% of births occurred in their own homes, with the exclusive assistance of midwives and family members. This percentage is notably high when compared to other regions of the country. Nonetheless, this data reveals an even more significant incidence when we look at it from a different perspective; this being that 71.5% of the women interviewed had at least one birth in their own home, without access to any service integrated into the SUS, which highlights the urgency of improving PC for these traditional communities. These data corroborate those of Cabral; Cella; Freitas (2020) and Moura (2005), who found 61% and 85%, respectively, of natural and home births, in the middle Solimões River region.

The results of this study should be interpreted with caution and should consider the temporal and geographical contexts. The research reflects the specific reality of the year 2022, and these communities show significant evolutionary dynamics over time. In addition, geographical restrictions may limit the generalization of the findings to other regions, since the study was conducted in only one community. These limitations highlight the complex organization of these communities and highlight the need for future studies. However, they do not compromise the relevance of the research, as they bring to light the problem of the SRH of riverine women who live on the banks of lakes, rivers and also on the margin of society, and are often forgotten by government authorities.

## FINAL CONSIDERATIONS

The results highlighted the significant contribution of riverine women in the organization of the economic and cultural production of these communities, especially in their work activities that complement family income. However, when examining the SRH of these riverine residents, it is observed that they do not enjoy the same protagonism, and are often contradicted in family planning decisions.

The study also reveals a substantial gap in health education, especially in the context of SRH, which places the women in situations of vulnerability and risks to their health and to the health of their families. Finally, there is an urgent need to develop reproductive health programs that take into account the specific social and cultural conditions of isolated communities in the Amazon.

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