dx.doi.org/10.5380/ce.v26i0.76347

Cogit. Enferm. 2021, v26:e76347

Cogitare Enfermagem

ORIGINAL ARTICLE

INFECTIOUS DISEASES AND THE PRIMARY HEALTH CARE NETWORK IN RIVERSIDE COMMUNITIES

Ana Kedma Correa Pinheiro[1]
Laura Maria Vidal Nogueira[1]
Suzana Rosa André[2]
Ivaneide Leal Ataíde Rodrigues[1]
Lidiane de Nazaré Mota Trindade[1]
Ana Paula Rezendes de Oliveira[1]

ABSTRACT

Objective: to analyze the profile of infectious diseases in riverside population relating it to the primary health care network. Method: epidemiological study, with data of infectious diseases notified/confirmed in the Notifiable Diseases Information System between 2013-2017 and the primary care network of the riverine region of Abaetetuba-Pará-Brazil. Descriptive analysis with Pearson's Chi-square, p≤0.05. Results: 393 cases of Hansen´s disease, tuberculosis, Chagas disease, viral hepatitis, meningitis, visceral leishmaniasis, dengue and Chikungunya fever were recorded. The most prevalent were Hansen´s disease and dengue. The primary care network includes 26 health posts with a reduced team and four teams of community health agents. Conclusion: health services are far from what is established in the National Primary Care Policy, which should value the epidemiological profile and the riverside way of life. The results may subsidize the planning and action in health/nursing.

DESCRIPTORS: Communicable Diseases; Primary Health Care; Rural Health Services; Epidemiological Monitoring.

HOW TO REFERENCE THIS ARTICLE:

Pinheiro AKC, Nogueira LMV, André SR, Rodrigues ILA, Trindade L de NM, Oliveira APR de. Infectious diseases and the primary health care network in riverside communities. Cogit. Enferm. [Internet]. 2021 [accessed "insert day, monh and year"]; 26. Available from: http://dx.doi.org/10.5380/ce.v26i0.76347.

[1]Universidade do Estado do Pará. Belém, PA, Brasil.
[2]Universidade Federal do Rio de Janeiro. Rio de Janeiro, RJ, Brasil.

INTRODUCTION

Brazil is experiencing an atypical epidemiological transition, with increased morbidity and mortality from chronic degenerative diseases concomitant with infectious and parasitic diseases. This is, therefore, a peculiar scenario, where there is unequal income distribution, differentiated exposure to specific risks and inadequate living and working conditions, common in traditional populations, leaving them vulnerable to illness, especially to infectious diseases, which continue to represent an important public health problem in our country[1].

This context is due, in part, to the absence of essential public policies for subsistence, which include basic sanitation, health services and adequate educational system. These are places where poverty, social exclusion, and lack of access to basic health care draw the daily life of social vulnerability, present in riverside communities[2].

The Brazilian Unified Health System (SUS), through Primary Health Care (PHC), should help improve access to care services, impacting the epidemiological panorama of infectious diseases, especially among the most vulnerable populations[3].

Among the measures to address the problems of health care experienced by rural/riparian populations, the National Policy for the Integral Health of the Countryside, Forest, and Water Populations, aiming to improve the level of health of historically excluded populations, present specific and particularized strategies[4]. In addition, the National Primary Health Care Policy (PNAB), revised by Ordinance No. 2.436/ 2017, established the characteristics and profile of PHC services for riverside communities[5].

Despite government initiatives, Brazil still has 40.5% of municipalities with high or extremely high criticality for infectious diseases related to poverty, with a higher concentration in the North region. It is noteworthy that the spread of reemerging diseases is a national reality, however, the North and Northeast regions have shown greater occurrence in municipalities far from capitals and urban perimeters[6].

Among the municipalities of the state of Pará, about 50% have a riverside population and a significant percentage living on the banks of rivers, whose livelihood is in fishing, extractivism and agriculture[7]. The riverside way of life reduces access to urban areas and exposes residents to the absence of effective public policies, due to the fragility in the minimum infrastructure of basic sanitation, electricity, and health services. Regarding health, they depend almost exclusively on SUS, seeking the health service closest to their residence[8], and face many challenges in accessing the network of services, mainly for geographical, economic, and cultural reasons[1]. These characteristics have repercussions on the indicators of disease within the state, besides requiring differentiated attention by health teams with appreciation of the way of life[9].

Official documents[10-15] indicate that the state of Pará has a high incidence and prevalence of diseases such as tuberculosis, viral hepatitis, Hansen´s disease, Chagas disease, meningococcal disease, Visceral Leishmaniasis (VL), Chikungunya fever and dengue. This epidemiological scenario characterizes as a public health problem several infectious diseases, and that the most vulnerable populations are the most affected[16].

Thus, illness is closely related to the available health services and studies on the subject are important to support the construction and implementation of public policies to strengthen the principles of the SUS[2-3]. Thus, the objective of this study was to analyze the profile of infectious diseases in the riverside population in relation to the Primary Health Care network.

METHOD

Epidemiological, descriptive, and cross-sectional study, according to the methodological guidelines of Strengthening the Reporting of Observational Studies in Epidemiology (STROBE)[17]. Conducted in a riverside area of the municipality of Abaetetuba, located in the northeast of the state of Pará, in the Amazon region, called "islands", which total 72, and were the setting of this study[18].

We analyzed 58 cases of Hansen´s disease, 46 of tuberculosis, 70 of Chagas disease, 54 of viral hepatitis, 15 of meningitis, 12 of VL, 132 of dengue, and six of Chikungunya fever confirmed in the Notifiable Diseases Information System (SINAN) in the period from 2013 to 2017 by the Municipal Health Secretariat of the Municipality of Abaetetuba (SESMAB).

The definition of the diseases studied was based on official statistical data that indicate high incidence of acute Chagas disease in the state[19], high rate of viral hepatitis and increase in dengue cases in rural areas in 2017[20]. Moreover, it is a municipality considered a priority for the implementation of measures to combat tuberculosis and is among the municipalities in the Tocantins Region with the highest occurrence of meningitis cases. VL is among the main infectious diseases responsible for high morbidity in Pará[15] and Hansen´s disease is classified as a hyperendemic disease[13]. This scenario classifies such diseases as challenging for public health management and important for the implementation of surveillance measures.

The data were obtained from SINAN via SESMAB, in bank format, separated by diseases of interest, with the following variables: year of notification, age, gender, and education. Data from the PHC network were made available by the Department of Primary Care of SESMAB and contained information about name and address of the unit and typology.

Descriptive analysis was performed to characterize the sample, and inferential statistics with Pearson's Chi-square, with significance level $p \leq 0.05$, using the Statistical Package for the Social Sciences version 22.0.

This study was approved by the Research Ethics Committee of the Undergraduate Nursing Course of the Pará State University, under opinion number 2.615.035.

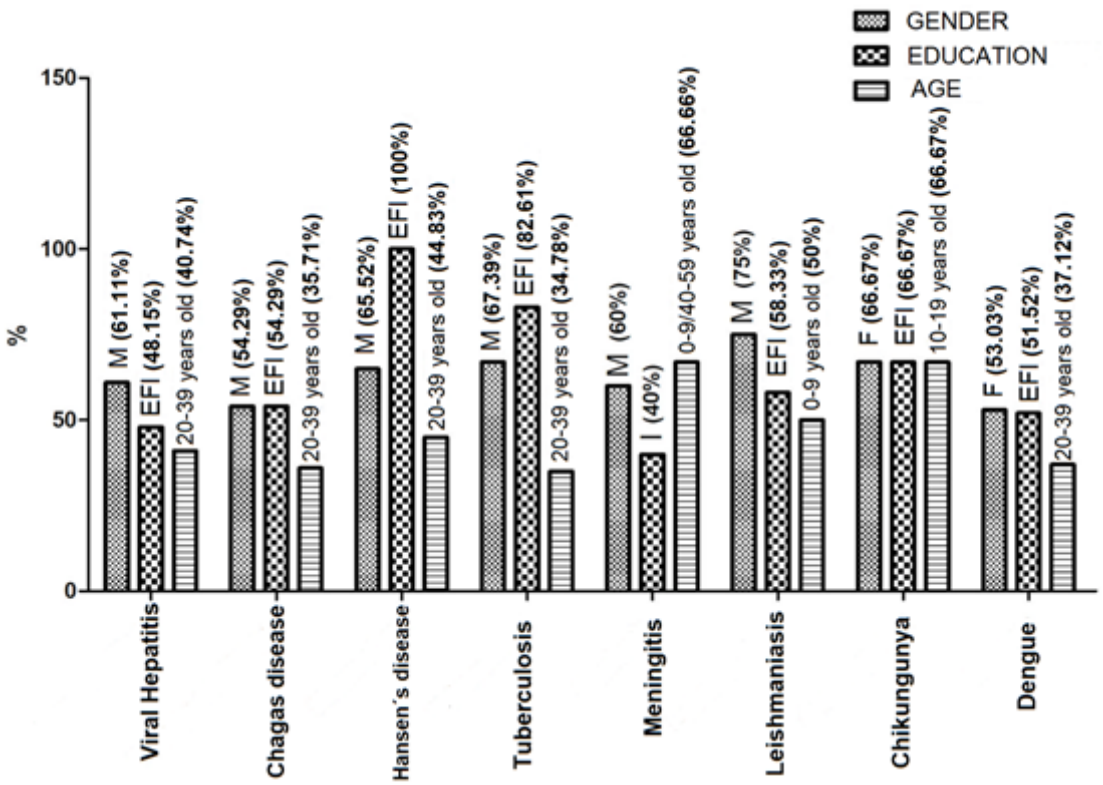
RESULTS

In the period from 2013 to 2017, 393 cases of infectious diseases were confirmed in the riverine region of Abaetetuba, distributed in 58 (14.76%) cases of Hansen´s disease, 46 (11,70%) of tuberculosis, 70 (17.81%) of Chagas disease, 54 (13.74%) of viral hepatitis, 15 (3.82%) of meningitis, 12 (3.05%) of VL, 132 (33.59%) of dengue and six (1.53%) of Chikungunya fever.

There was a male predominance for viral hepatitis (n=33; 61.11%), Chagas disease (n=38; 54.29%), Hansen´s disease (n=38; 65.52%), tuberculosis (n=31; 67.39%), meningitis (n=9; 60%), and VL (n=9; 75%).

As for education, we identified a significant percentage with incomplete primary education in the following diseases: viral hepatitis (n=26; 48.15%), Chagas disease (n=38; 54.29%), Hansen´s disease (n=58; 100%), tuberculosis (n=38; 82.61%), VL (n=7; 58.33%), and dengue (n=68; 51.52%).

A greater distribution between 20 and 39 years was identified in the following diseases: viral hepatitis (n=22; 40.74%), Chagas disease (n=25; 35.71%), Hansen´s disease (n=26; 44.83%), tuberculosis (n=16; 34.78%), and dengue (n=49; 37.12%) (Figure 1).



M=Male. F=Female. A=Alliterate. EFI=Incomplete fundamental school. EFC=Complete elementary school. EMI=High School Incomplete. EMC=High School Complete. ESI=Higher Education Incomplete. ESC=Higher Education Complete. I=I=Not Applicable. NA=Not Applicable. NP=Not Filled out.

Figure 1 - Social profile of people notified with infectious disease in the riverine region. Abaetetuba, Pará, Brazil, 2018
Source: Authors (2018)

Meningitis affected children up to nine years old in five (33.33%) and adults between 40 and 59 years old in five (33.33%), and no education level in six (40%), suggesting that the data was not obtained at the time of notification. Chikungunya fever prevailed in females for four (66.67%), with incomplete high school education in four (66.67%) and age range of 10 to 19 years in four (66.67%). The cases of VL were predominant in children up to nine years old four (50%).

Of the total studied, 239 (60.81%) had incomplete elementary school education (x^2=1154.7 p<0.0001), 222 (56.48%) were male (x^2=6.6 p=0.01) and 145 (36.89%) were in the age group between 20 and 39 years (x^2=89.5 p<0.0001) (Table 1).

Table 1 - Sample prevalence and comparison with social profile. Abaetetuba, Pará, Brazil, 2018 (continues)

Variable		n	%	x^2	p
Gender	Male	222	56,48	6,6	0,01*
	Female	171	43,52		
Education	Illiterate	15	3,82	1154,7	<0,0001**
	Incomplete Fundamental School	239	60,81		
	Complete Fundamental School	13	3,31		

	Incomplete High School	14	3,56		
	Complete High School	31	7,89		
	Incomplete Higher Education	5	1,27		
	Complete Higher Education	2	0,51		
	Ignored	14	3,56		
	Not Applicable	38	9,67		
	Not filled in	22	5,6		
Age	0-9	52	13,23	89,5	<0,0001**
	10-19	73	18,57		
	20-39	145	36,89		
	40-59	87	22,14		
	>59	36	9,16		

*Significant for <0.05. **Significant for p<0.01. Source: Authors (2018).

Regarding the year of notification, 29 (7.38%) cases were recorded in 2013, 52 (13.23%) in 2014, 49 (12.47%) in 2015, 92 (23.41%) in 2016, and 171 (43.51%) in 2017. Hansen´s disease and viral hepatitis reached similar prevalences in the year 2013 with eight (27.58%) and seven (24.13%) cases, respectively.

In 2014, 21 (40.38%) cases were of Hansen´s disease, in 2015, 16 (40.38%) were of Chagas' disease, and in 2016 and 2017, dengue was in the lead with 27 (29.35%) and 105 (61.40%) cases, respectively (Figure 2).

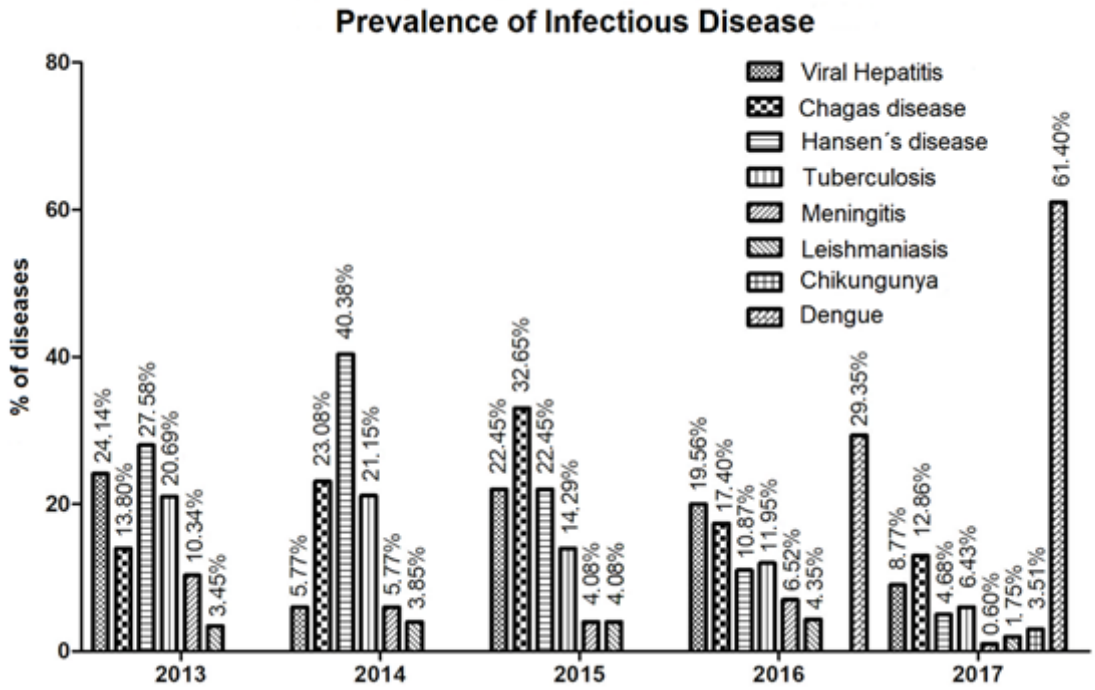


Figure 2 - Most prevalent infectious diseases in the riverside region. Abaetetuba, Pará, Brazil, 2018
Source: Authors (2018).

In the distribution of diseases, over the period, Hansen´s disease stood out in the years 2013 and 2014 (x^2=7.2; p=0.2) and (x^2=32; p>0.0001), respectively. In 2015, Chagas disease (x^2=18.95; p=0.002), and in the following years dengue: 2016 (x^2=28.37; p>0.0001) and 2017, (x^2=441.3; p>0.0001), with statistical significance for Hansen´s disease in 2014, Chagas disease in 2015 and for dengue cases in the years 2016 and 2017 (Table 2).

Table 2 - Comparison of the prevalences of infectious diseases by year. Abaetetuba, Pará, Brazil, 2018 (continues)

Year	Diseases	n	%	x^2	p
2013	Viral Hepatitis	7	24,14	7,2	0,2
	Chagas Disease	4	13,8		
	Hansen´s disease	8	27,58		
	Tuberculosis	6	20,69		
	Meningitis	3	10,34		
	Visceral Leishmaniasis	1	3,45		
	Chikungunya Fever	0	0		
	Dengue Fever	0	0		
2014	Viral Hepatitis	3	5,77	32	<0,0001**
	Chagas Disease	12	23,08		
	Hansen´s disease	21	40,38		
	Tuberculosis	11	21,15		
	Meningitis	3	5,77		
	Visceral Leishmaniasis	2	3,85		
	Chikungunya Fever	0	0		
	Dengue Fever	0	0		
2015	Viral Hepatitis	11	22,45	18,95	0,002**
	Chagas Disease	16	32,65		
	Hansen´s disease	11	22,45		
	Tuberculosis	7	14,29		
	Meningitis	2	4,08		
	Visceral Leishmaniasis	2	4,08		
	Chikungunya Fever	0	0		
	Dengue Fever	0	0		
2016	Viral Hepatitis	18	19,56	28,37	<0,0001**
	Chagas Disease	16	17,4		
	Hansen´s disease	10	10,87		
	Tuberculosis	11	11,95		
	Meningitis	6	6,52		
	Visceral Leishmaniasis	4	4,35		
	Chikungunya Fever	0	0		

	Dengue Fever	27	29,35		
2017	Viral Hepatitis	15	8,77	388,76	<0,0001**
	Chagas Disease	22	12,86		
	Hansen´s disease	8	4,68		
	Tuberculosis	11	6,43		
	Meningitis	1	0,6		
	Visceral Leishmaniasis	3	1,75		
	Chikungunya Fever	6	3,51		
	Dengue Fever	105	61,4		

Source: Authors (2018)

The health services that serve the river dwellers correspond to a Basic Health Unit Fluvial, which provides itinerant care; a team of Riverside Family Health (eSFR) located in one of the communities; 26 health clinics; and four teams of Community Health Agents (CHA) (Table 3).

Table 3 - Distribution of health services made available to the riverine population. Abaetetuba, Pará, Brazil, 2018

TYPES OF RIVERSIDE PHC SERVICES	TOTAL
Basic Health Unit Fluvial	1
Riverside Family Health Teams	1
Health Facility	26
Community Health Agent teams	4

Source: Authors (2018)

The eSFR serves the population of four communities, and the UBSF offers services to 12 islands, and the residents commute for services, since the unit is in the urban perimeter of the municipality.

The health clinics have small teams, consisting of one health post agent (chosen by the community with no health training criteria), one nursing technician or nursing assistant, one nurse instructor/supervisor who works in the Urban Family Health Strategy, and a physician who sees patients once a month in each health post. The four teams of CHAs total 68 agents, whose attributions are limited to orientation, case tracking, and treatment follow-up.

DISCUSSION

The analysis of the epidemiological profile of the riverside region of the municipality of Abaetetuba and its relationship with PHC services identified significant prevalence of infectious diseases that can be diagnosed and treated in PHC. However, the primary health services offered to the population proved insufficient to control these diseases. Data regarding the social profile of the cases analyzed showed traces of social vulnerability, peculiar to riverside populations.

Epidemiological data on Hansen´s disease[13], tuberculosis[14] and Chagas disease[11] corroborate the findings of this study. In the national panorama, the state of Pará is classified as hyperendemic in Hansen´s disease[13] and ranks fifth in Hansen´s disease endemicity[8]. The municipality of Abaetetuba is considered a priority for the implementation of measures to combat tuberculosis[15] and identified with the highest number of cases of acute Chagas disease in the state[19].

Regarding viral hepatitis, 26 cases were recorded in the municipality between 2011 and 2015, confirmed in SINAN[20]. In this study, 54 cases of the disease were identified between 2013 and 2017. This high rate points to the need for investments in sanitation facilities as a protective measure to reduce cases, and the consequent impact on expenses resulting from the proliferation of viral hepatitis[21].

Regarding meningitis, Abaetetuba is among the municipalities in the Tocantins Region with the highest occurrence of cases[15], totaling 46 confirmed cases, seven of them in rural areas, according to the SINAN registry[20]. Therefore, a relatively low occurrence was identified; however, considering its acute manifestation and severe prognosis, the identified data require strategies for health promotion, prevention, and treatment of the disease, especially regarding vaccination, essential in the prevention of meningococcal disease and in the decline of possible outbreaks[22].

Although Abaetetuba is not among the municipalities with the highest number of VL cases, the disease is among the main infectious diseases responsible for high morbidity in Pará[15] and has been manifesting itself as endemic and/or epidemic in dozens of municipalities, which justifies continuous surveillance to prevent new cases[23].

Regarding dengue, in 2017, there was an outbreak in the locality with 105 cases, caused by the presence of numerous reservoirs of the Aedes aegypti mosquito, including from incorrect disposal of garbage. Facing dengue, especially in riverside areas, requires vector control[24], associated with screening measures and active search for cases, aiming to diagnose and treat patients early.

The riverside population studied presented a social profile with a predominance of illness in males of working age, which may be linked to lifestyle, forms of exposure at work and less demand for health services. There was a greater involvement of people with low education, compatible with the social pattern of the population, an aspect to be valued by health services, because the fewer years of study, the greater the chances of becoming ill, due to the difficulty of access to information, besides being a determining factor for the increase of social vulnerability[25].

The identified social characterization corroborates the riverside profile, socially vulnerable, living in poverty, without access to essential goods and services, which interferes with quality of life and enhances the morbidity and mortality indicators. Moreover, these social determinants of health, which surround economic, social, cultural, political, and environmental aspects, interfere with the quality of life of the population and the low access to health services, besides being associated with the various forms of illness and causes of mortality present in this population[26].

The socio-epidemiological configuration of the study points to the vulnerability of the population to illness and reaffirms the need to offer primary care services that meet the specificities of these populations[27], since the diseases studied are of compulsory notification and PHC must respond to the control of diseases[28].

Nevertheless, the public policies that guide the assistance to these populations are not implemented in a comprehensive, equitable and resolutive way. The Brazilian Health Minister[4], through Ordinance No. 2311 of October 23, 2014, established the National Policy for the Comprehensive Health of the Populations of the Fields, Forests, and Waters, prepared with the participation of social movements through the Land Group; this policy guarantees the services of the Family Health Strategy and Basic Health Units of the river and riverside modality.

Through PNAB, the Brazilian Health Minister recognized the need for additional teams to carry out health actions for specific populations in the Primary Care setting, which ensured the structuring of PHC on the islands of Abaetetuba.

The riverside dwellers inhabit territories that are difficult to move around due to geographical characteristics and precariousness of means of transportation. They use the public health network always seeking the health service closest to their residence[8]. In this sense, the performance of PHC teams should ensure the resolution of health processes, universality, and completeness of care, valuing the way of life of these users[9].

Similar studies have identified the fragility of the health services and the need for adjustments in the care model offered to socially vulnerable populations, in order not to compromise the quality of care and to meet the population's demands[1,29].

Another relevant aspect is the difficulty of locomotion of the health team, besides the reduction of human resources, delay in the regulation of specialized consultations and the difficulty of access to the urban center, characterizing obstacles to quality care[1]. The guarantee of resolutive and equitable services, described in the PNAB[5], remains a major challenge, since it involves public investments for its effectiveness and decision as a public policy.

Despite the contributions of this study to the health care of riverside dwellers, it has limitations because it was conducted with secondary data, therefore, subject to inaccuracies and incompleteness. Another limitation was the analysis in a single city, but the results may have applicability to riparian populations that have geographical, social, and epidemiological similarities.

CONCLUSION

The socio-epidemiological profile of this study corroborates the situation of vulnerability of the riverside population and reaffirms the need for a PHC service that meets the particularities of these populations. They are relatively young people, with low education, referring to the need for intersectoral action to face the illness.

The actions for screening, active search, diagnosis, and treatment of diseases are clearly described in the manuals made available by the HM. PHC must respond to local demands with resoluteness, requiring a complete team, structure, and work logistics, as established in the National Primary Care Policy and in the National Policy for the Integral Health of the Populations of the Fields, Forests, and Waters.

Finally, primary care services for riverside populations should ensure access, coverage, and resoluteness to be the gateway for users in the health system, valuing the way of life and the local epidemiological profile.

The results can subsidize the loco regional planning and health action, especially of nursing and community workers, optimizing the practices offered, according to the modality of service. They can also contribute to the analysis of the assistance policy for the

riverside population, aiming at an equitable and systematic offer.

REFERENCES

1. Pereira LL, Pacheco L. The challenges faced by the more doctors program in providing and ensuring comprehensive health care in rural areas in the Amazon region, Brazil. Interface (Botucatu) [Internet]. 2017 [accessed 19 out 2020]; 21(supl.1). Available from: https://doi.org/10.1590/1807-57622016.0383.

2. Paiva SG. Aspectos bioéticos e epidemiológicos no estudo de populações vulneráveis de difícil acesso. Rev Cient ITPAC. [Internet]. 2014 [accessed 06 set 2018]; 7(3). Available from: https://assets.unitpac.com.br/arquivos/Revista/73/artigo1.pdf.

3. Pitilin E de B, Lentsck MH. Primary health care from the perception of women living in a rural area. Rev. Esc. Enferm. USP [Internet]. 2015 [accessed 19 out 2020]; 49(5). Available from: https://doi.org/10.1590/S0080-623420150000500003.

4. Ministério da Saúde (BR). Portaria n. 2.311, de 23 de outubro de 2014. Altera a Portaria n° 2.866/GM/MS, de 2 de dezembro de 2011, que institui, no âmbito do Sistema Único de Saúde (SUS), a Política Nacional de Saúde Integral das Populações do Campo e da Floresta (PNSIPCF). [Internet] Diário Oficial da República Federativa do Brasil. 2014 out. 24 [accessed 19 out 2020]. Available from: http://bvsms.saude.gov.br/bvs/saudelegis/gm/2014/prt2311_23_10_2014.html.

5. Ministério da Saúde. Portaria n. 2.436, de 21 de setembro de 2017. Aprova a Política Nacional de Atenção Básica, estabelecendo a revisão de diretrizes para a organização da Atenção Básica, no âmbito do Sistema Único de Saúde (SUS). Diário Oficial da União [Internet]. 2017 set 22; Seção 1:68 [accessed 18 ago 2018]. Available from: http://bvsms.saude.gov.br/bvs/saudelegis/gm/2017/prt2436_22_09_2017.html.

6. Souza HP de, Oliveira WTGH de, Santos JPC dos, Toledo JP, Ferreira IPS, Esashika SNG de S, et al. Doenças infecciosas e parasitárias no Brasil de 2010 a 2017: aspectos para vigilância em saúde. Rev. Panam. Salud Publica. [Internet]. 2020 [accessed 04 set 2020]; 44. Available from: https://doi.org/10.26633/RPSP.2020.10.

7. Chaves EC, Costa SV, Flores RL dos R, Neves EOS das. Social deprivation index and leprosy in Pará State, Brazil, in 2013: spatial analysis. Epidemiol. Serv. Saúde. [Internet]. 2017 [accessed 19 out 2020]; 26(4). Available from: https://www.scielo.br/scielo.php?pid=S2237-96222017000400807&script=sci_arttext&tlng=en.

8. Albuquerque NC, Portal LC, Rodrigues ILA, Nogueira LMV. Busca ativa de hanseníase por meio de educação em saúde entre populações ribeirinhas. Rev enferm UFPE online. [Internet]. 2016 [accessed 19 out 2020]; 10(7). Available from: https://periodicos.ufpe.br/revistas/revistaenfermagem/article/view/11324/13015.

9. Gama ASM, Fernandes TG, Parente RCP, Secoli SR. Inquérito de saúde em comunidades ribeirinhas do Amazonas, Brasil. Cad. Saúde Pública. [Internet]. 2018 [accessed 10 abr 2020]; 34(2). Available from: https://doi.org/10.1590/0102-311X00002817.

10. Ministério da Saúde (BR). Secretaria de Vigilância em Saúde. Boletim Epidemiológico: situação epidemiológica da doença meningocócica, Brasil, 2007-2013. [Internet] Brasília: Ministério da Saúde; 2016 [accessed 25 abr 2018]; 47(29): 1-8. Available from: http://portalarquivos2.saude.gov.br/images/pdf/2016/julho/29/2016-015---DM.pdf.

11. Ministério da Saúde (BR). Secretaria de Vigilância em Saúde. Boletim Epidemiológico – n. 29. Panorama da doença de Chagas no Brasil. [Internet] Brasília: Ministério da Saúde; 2019 [accessed 19 out 2020]. Available from: https://antigo.saude.gov.br/images/pdf/2019/novembro/29/Boletim-epidemiologico-SVS-36-interativo.pdf.

12. Ministério da Saúde (BR). Secretaria de Vigilância em Saúde. Boletim Epidemiológico de Hepatites Virais 2019. [Internet] Brasília: Ministério da Saúde; 2019 [accessed 19 out 2020]. Available from: http://www.aids.gov.br/pt-br/pub/2019/boletim-epidemiologico-de-hepatites-virais-2019.

13. Ministério da Saúde (BR). Secretaria de Vigilância em Saúde. Boletim Epidemiológico de Hanseníase 2020. [Internet] Brasília: Ministério da Saúde; 2020 [accessed 19 out 2020]; Available from: http://www.aids.gov.br/pt-br/pub/2020/boletim-epidemiologico-de-hanseniase-2020.

14. Ministério da Saúde (BR). Secretaria de Vigilância em Saúde. Boletim Epidemiológico de Tuberculose 2020 [Internet] Brasília: Ministério da Saúde; 2020 [accessed 19 out 2020]. Available from: http://www.aids.gov.br/pt-br/pub/2020/boletim-epidemiologico-de-turbeculose-2020.

15. Governo do Estado do Pará (PA). Secretaria de Saúde Pública. Plano Estadual de Saúde 2016 – 2019 [Internet]. Belém: 2016 [accessed 19 out 2020]. Available from: https://www.conass.org.br/pdf/planos-estaduais-de-saude/PA_Plano-estadual-saude-2016-2019.pdf.

16. Pereira RA, Alves-Souza RA, Vale J de S. O processo de transição epidemiológica no Brasil: Uma revisão de literatura. Rev Cient da Fac Educ e Meio Ambiente: Revista da Faculdade de Educação e Meio Ambiente -FAEMA [Internet]. 2015 [accessed 30 jul 2018]; 6(1). Available from: http://www.faema.edu.br/revistas/index.php/Revista-FAEMA/article/view/322/387.

17. Elm E von, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. J Clin Epidemiol [Internet]. 2008 [accessed 28 ago 2020]; 61(4). Available from: https://doi.org/10.1016/j.jclinepi.2007.11.008.

18. Gonçalves OD, Rodrigues JC, Sobreiro Filho J. Marés das rebeldias em Abaetetuba: dos rios da existência à resistência dos territórios na Amazônia paraense, baixo Tocantins. Rev Tamoios [Internet]. 2019 [accessed 07 ago 2019]; 15(1). Available from: https://doi.org/10.12957/tamoios.2019.41209.

19. Santos SO dos. Eco-epidemiologia da doença de Chagas aguda em área amazônica. Município de Abaetetuba, estado do Pará, Brasil, 2008 - 2009 [tese]. Ouro Preto (MG): Universidade Federal de Ouro Preto; 2013 [accessed 10 ago 2019]. Available from: https://www.repositorio.ufop.br/bitstream/123456789/3597/1/TESE_Eco-epidemiologiaDoen%C3%A7aChagas.pdf.

20. Ministério da Saúde (BR). Secretaria Executiva. Departamento de Informática do SUS - DATASUS. Informações de Saúde. [Internet]. Brasília; 2015 [accessed 10 out 2018]. Available from: http://www2.datasus.gov.br/DATASUS/index.php?area=0203&id=29878153.

21. Polimeni JM, Almalki A, Iorgulescu RI, Albu LL, Parker WM, Chandrasekara R. Assessment of Macro-Level Socioeconomic Factors That Impact Waterborne Diseases: The Case of Jordan. Int. J. Environ. Res. Public Health [Internet]. 2016 [accessed 15 out 2018]; 13(12). Available from: https://doi.org/10.3390/ijerph13121181.

22. Nunes C de LX, Barreto FMG, Sacramento JR do. Impacto da vacinação contra o meningococo C na ocorrência de doença meningocócica em hospital especializado. Rev Baiana Saúde Pública [Internet]. 2013 [accessed 25 out 2018]; 37(supl.1). Available from: https://doi.org/10.22278/2318-2660.2013.v37.n0.a593.

23. Silveira FT, Lima LV do R, Santos TV dos, Ramos PKS, Campos MB. Revendo a trajetória da leishmaniose visceral americana na Amazônia, Brasil: de Evandro Chagas aos dias atuais. Rev Pan-Amaz Saúde [Internet]. 2016 [accessed 28 out 2018]; 7(esp). Available from: http://dx.doi.org/10.5123/s2176-62232016000500003.

24. Abe KC, Miraglia SGEK. Dengue incidence and associated costs in the periods before (2000-2008) and after (2009-2013) the construction of the hydroelectric power plants in Rondônia, Brazil. Epidemiol. Serv. Saúde. [Internet]. 2018 [accessed 19 out 2020]; 27(2). Available from: http://dx.doi.org/10.5123/s1679-49742018000200012.

25. Barros PG de, Pinto ML, Silva TC da, Silva EL, Figueiredo TMRM de. Perfil epidemiológico dos

casos de tuberculose extrapulmonar em um município do estado da Paraíba, 2001–2010. Cad. Saúde Colet. [Internet]. 2014 [accessed 30 out 2018]; 22(4). Available from: https://doi.org/10.1590/1414-462X201400040007.

26. Ministério da Saúde (BR). Secretaria de Vigilância em Saúde. Departamento de Análise de Situação em Saúde. Saúde Brasil 2013: uma análise da situação de saúde e das doenças transmissíveis relacionadas à pobreza. [Internet] Brasília: Ministério da Saúde; 2014 [accessed 03 nov 2018]. Available from: http://bvsms.saude.gov.br/bvs/publicacoes/saude_brasil_2013_analise_situacao_saude.pdf.

27. Carey TA, Wakerman J, Humphreys JS, Buykx P, Lindeman M. What primary health care services should residents of rural and remote Australia be able to access? A systematic review of "core" primary health care services. BMC health services research. [Internet]. 2013 [accessed 07 nov 2018]; 13(178). Available from: https://doi.org/10.1186/1472-6963-13-178.

28. Conselho Nacional de Secretários de Saúde (BR). A Atenção Primária e as Redes de Atenção à Saúde. [Internet]. Brasília: CONASS; 2015 [accessed 09 nov 2018]. Available from: https://www.conass.org.br/biblioteca/pdf/A-Atencao-Primaria-e-as-Redes-de-Atencao-a-Saude.pdf.

29. Oliveira EM de, Felipe EA, Santana H da S, Rocha IH, Magnabosco P, Figueiredo MA de C. Determinantes sócio-históricos do cuidado na estratégia saúde da família: a perspectiva de usuários da área rural. Saúde Soc. [Internet]. 2015 [accessed 12 nov 2018]; 24(3). Available from: https://doi.org/10.1590/S0104-12902015132279.

Received: 08/09/2020
Approved: 15/03/2021

Associate editor: Luciana Alcântara Nogueira

Corresponding author:
Ana Kedma Correa Pinheiro
Universidade do Estado do Pará – Belém, PA, Brasil
E-mail: anakedmaenf@gmail.com

Role of Authors:
Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work - Pinheiro AKC, Nogueira LMV; Drafting the work or revising it critically for important intellectual content - André SR, Rodrigues ILA, Trindade L de NM. All authors approved the final version of the text.

ISSN 2176-9133