




Health vulnerabilities for vertical transmission of syphilis: programmatic situation of primary care services in a health region in Brazil

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ABSTRACT

Objective: to analyze the programmatic situations present in Primary Health Care in a health region in Brazil that are considered vulnerabilities to congenital syphilis.

Methods: a qualitative study was conducted between October 2019 and April 2020 through semi-structured interviews with 12 municipal coordinators of Primary Health Care in a Health Region in the state of Ceará, Brazil. The information was processed using Content Analysis and the webQDA® software, with the support of the Health Vulnerability Model. **Results:** programmatic situations related to the infrastructure of Primary Health Care services, the management, and the work process were revealed: a shortage of trained human resources, materials, and supplies for the diagnosis and treatment of syphilis in pregnant women; weaknesses in educational and disease prevention actions; inadequacies in case reporting and communication between services in the care network; and lack of adequate public policies and programs. **Conclusion:** programmatic situations in Primary Health Care services that favor the vertical transmission of syphilis include precarious infrastructure, weaknesses in work processes and management, as well as insufficient human and financial resources for the prevention and control of gestational syphilis.

Descriptors: Health Vulnerability; Primary Health Care; Syphilis, Congenital; Infectious Disease Transmission, Vertical; Health Management.

INTRODUCTION

Syphilis is a systemic, sexually transmitted, and persistent infection exclusive to humans that affects approximately 8 million people each year⁽¹⁾. The etiological agent of this disease, the *Treponema pallidum*, has the ability to cross the placental barrier and contaminate the fetus from the 14th week of pregnancy, characterizing Congenital Syphilis⁽²⁾.

In the Americas, there was a 28% increase in cases of syphilis in pregnant women between 2020 and 2022, with an estimated 4.98 cases per thousand live births in 2022, which corresponds to 68 thousand births of children affected by this disease, exceeding the target established by the World Health Organization (WHO; 0.5 cases/1000 live births)⁽³⁾. In Brazil, between 2019 (pre-pandemic year) and 2022, there was a 16% increase in the incidence of Congenital Syphilis, a period in which the Northeast region reached the second-highest rate in the country, with 10.3 cases per thousand live births⁽⁴⁾.

The vertical transmission of syphilis is related to the low uptake/early detection of pregnant women and inadequate treatment. Antenatal care in Primary Health Care (PHC) is a frontline tool for managing Congenital Syphilis cases, allowing action on the vulnerabilities permeating sexual and reproductive healthcare through

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approaches aimed at structural, technical-scientific, and organizational disparities in access to health services^(2,5).

In this sense, Congenital Syphilis stands out as an indicator of the quality of PHC since it can be associated with situations involving the management and provision of services in this area. Some situations are faced in this context, such as shortages of medicines; non-adherence, abandonment or inadequate treatment; and fragmentation of care due to gaps in the work process^(6,7).

Healthcare institutions' infrastructure and work process are elements of the "programmatic situation" linked to the health field. The absence or shortage of services/resources produces vulnerabilities and compromises the quality of care⁽⁸⁻¹¹⁾.

Although the programmatic situation corresponds to health services, vulnerability always lies with the user. Professional and organizational impacts on access and quality of care can generate conditions of vulnerability in health.

Health vulnerability is expressed in all dimensions of the social subject, based on the tensions generated by power relations that can produce conditions of precariousness or agency. Its importance for public health is noteworthy, as it is considered a diverse, dynamic, and multiple phenomenon that favors an approach based on the observation of the subjects' subjectivity and the processes in which they are inserted⁽⁹⁾.

It is crucial to discuss the processes that undermine care and impact public healthcare⁽⁸⁾, especially with regard to the prevention and control of vertical transmission of syphilis, as this is an age-old situation that still affects the Brazilian population. Considering the PHC that organizes the Healthcare Network (Portuguese acronym: RAS) of the Brazilian Unified Health System (SUS), it is relevant to analyze the programmatic situations related to the context of syphilis in this area that make pregnant women vulnerable. Although the literature indicates some of these situations that constitute weaknesses in antenatal care within the PHC scope^(5,12-14), these have not yet been analyzed from the perspective of Congenital Syphilis.

Therefore, the question is: what programmatic situations in PHC services experienced by pregnant women express vulnerabilities for the vertical transmission of syphilis?

The evidence generated in this study may contribute to the management of care, organization of the care/surveillance network, and planning of actions for the prevention and control of Congenital Syphilis.

The study aims to analyze the programmatic situations present in PHC that constitute vulnerabilities for Congenital Syphilis.

METHODS

Type of study and location

Qualitative study was conducted between October 2019 and April 2020. The setting was the PHC of a Decentralized Health Area among the five Health Regions of the state of Ceará, Brazil, composed of 55 municipalities with an estimated population of 629,957

inhabitants and a territorial area of 17,333.51 km². Since 2017, this Health Region has maintained a high number of Congenital Syphilis cases, ranking second in the state in 2022. Furthermore, there is a growing trend in the number of cases in the region, with rates above the state average (16.8/1,000 live births)⁽¹⁵⁾.

Population and Eligibility Criteria

The study population consisted of PHC Coordinators from the 16 municipalities that make up the Decentralized Health Area under study, who reported cases of Congenital Syphilis in 2017. This period corresponds to the year preceding the start of the leading project proposed for 2018/2021. These professionals were chosen to compose the sample based on their characteristics related to their role in the organization of healthcare. Although the 16 coordinators contacted agreed to participate in the study, four of them had impediments caused by the demands of the pandemic context in early 2020, and 12 constituted the sample.

Data collection

Data were collected through face-to-face interviews conducted in the municipality where each coordinator works, using a semi-structured script⁽¹⁶⁾ containing a participant characterization section, as well as guiding questions about management and organization of services in relation to Congenital Syphilis control. The interviews lasted 40-60 minutes and were audio-recorded.

Data analysis procedure

Data analysis was performed using the Content Analysis method proposed by Bardin⁽¹⁷⁾, applying the Thematic Analysis Technique, which comprises four stages: pre-analysis, analysis, treatment of results, and interpretation. In addition, the analysis was supported by the Health Vulnerability model, which defines Programmatic Situation as the institutional particularities related to the provision of various health services to the population⁽⁸⁾.

The webQDA® software (version 3.0, 2016, WebQDA Software, Portugal), developed through a partnership between the Universidade de Aveiro and the Centro de Investigação em Didática e Tecnologia na Formação de Formadores, was used. It allowed results to be organized, cut, coded, and recoded, assisting in the categorization of data. The coordinators were listed with the letter C followed by the Arabic numeral corresponding to the order of inclusion in the study (C1, C2, ..., C12), preserving anonymity.

The guidelines of the COREQ checklist, a framework that guides the development of qualitative studies, were followed, seeking to protect the scientificity and methodological rigor⁽¹⁸⁾.

Ethical aspects

Ethical guidelines for research involving human beings were respected. The project received a favorable opinion from the Research Ethics Committee of the Universidade Estadual Vale do Acaraú, obtaining Certificate of Presentation of Ethical Appreciation (CAAE) number 02329018.3.0000.5053.

RESULTS

Regarding the characterization of study participants, there was a predominance of the female sex ($n = 11$), nursing graduates ($n = 11$), time in the position of one to three years ($n = 6$), and at least one specialization ($n = 10$).

The corpus of analysis consisted of 408 record units coded in initial categories, which were analyzed and grouped into subcategories, recoded, and regrouped into final categories, giving rise to two central axes: Structure of Primary Health Care Services in relation to the prevention and control of Congenital Syphilis; and Health Vulnerability in the Management and Work Process in Primary Health Care, classified according to the programmatic situations (infrastructure and work process) that influence vulnerabilities⁽⁸⁾.

Structure of Primary Health Care Services in relation to the prevention and control of CS

This axis presents situations involving available resources, including the physical structure of services and health professionals focused on the prevention and control of Congenital Syphilis.

According to the following statement, the physical structure of the Basic Health Units (Portuguese acronyms: UBS) is precarious:

They are small basic units and some are more precarious. [Health units in rural areas] (C3)

The material resources available for the offer of educational activities and acquisition of supplies were mentioned as insufficient, as follows:

... if you want to do something, like, you want some pamphlets or some things, we don't have that for now, don't have. We don't have educational material, unfortunately, we do not have conditions... (C10)

... if we don't have the basics, the population won't bother much about it, and the results we saw were an increase in syphilis cases in the municipality. (C4) [*Basic = condom and contraceptive pills]*

Another problem concerns the shortage of benzathine penicillin in the UBS. This is the first-choice medication for treating syphilis. This context involves issues related to the purchase of this medication, which the coordinators mentioned as a slow bidding process:

... we already noticed the increase in the rate of syphilis, people could not afford to buy treatment, it was not offered by the government, and we were waiting for the delivery of these medications... (C4)

... it was difficult to buy [medication], and I also have the issue of a bidding process to buy it, you know, and sometimes it is a very flawed process with the municipalities. (C6)

The reduced number of rapid test kits for testing the disease, limited laboratory infrastructure, failures in the tests of a certain pharmaceutical company that result in the seizure of the batch, kits with a short expiration date, and delays in the transfer of the kits are some of the obstacles listed by coordinators, as described following:

... given the failure of some laboratories, we had many problems and, sometimes, it is hard to get the quantity [of tests]. (C6)

... last year, we had an entire batch of syphilis, of rapid tests for syphilis that were seized, right (they did not react), they were suspended, and we stayed a while without rapid tests for syphilis. (C11)

The high turnover and reduced number of health professionals, periods of mass layoffs of hired workers, as well as incomplete health teams limit the actions proposed for the prevention and control of Congenital Syphilis, according to the following statements:

... nowadays we have the situation of us being short of two doctors in a city that has ten teams ... (C11)

There is turnover of nurses. Hired workers, for example, are laid off when it comes November. (C5)

The following excerpts also highlight the lack of technical-scientific knowledge of professionals regarding the diagnosis, treatment, and monitoring of syphilis cases, as well as gaps in the training and qualification of these professionals:

... most of them, some of them, are recent graduates and really leave a lot to be desired because they have very little experience. (C1)

... our professionals, they also need ongoing education on this subject of syphilis, right, we still need to improve a lot. (C6)

Health Vulnerability in Management and Work Process in Primary Health Care

This thematic axis focuses on the role of PHC management and the obstacles in the work process related to monitoring pregnant women with syphilis. Failures related to the notification system and incomplete filling out of notification forms lead to underreporting of cases, which are mentioned by managers.

The challenges are this flawed system that we have... (C1)

... but many notifications are still missing the complete filling out. (C7)

Issues involving communication failures between the UBS and

management, as well as weaknesses in the referral and counter-referral system for care for pregnant women, are expressed in the following statements:

I wasn't aware of all this number of cases. I think it's very wrong that there is no reporting because here we have one number, and there they report something else. (C1)

... because the maternity ward sometimes only informs the mother, but it often doesn't come... they even complain there should be a feedback flow to the municipality, informing what was detected during childbirth, something so that they can continue the process. (C5)

The distance between managers and health professionals is evidenced in the following statements, indicating the lack of coordination between PHC and other services of the Healthcare Network for pregnant women in the municipalities:

This is more of a surveillance thing. I learn about the cases more broadly and not directly. (C1)

... the case of syphilis, even though it is in my territory, ends up sounding like it is the responsibility of the Department, there is no such management in there. (C3)

Other situations/problems identified in the statements are related to geographical barriers that hinder the access of both health professionals and pregnant women to exams/consultations and health education meetings.

We have health units where, sometimes the team goes in the morning, but if it rains heavily, they are stranded, they have no way of returning. (C5)

... for this pregnant woman coming to see a medical professional at the headquarters, there is the issue of access and the issue of resources. They cannot afford transportation... (C6)

Primary Health Care managers highlight the lack of financial resources and national programs to combat syphilis:

The lack of financial resources and national programs to combat syphilis are highlighted by PHC managers:

... there is a lack of actions in Brazil by the Ministry of Health so that we could have better control... (C8)

... and what is happening is that it is skewed, those who earn more are giving less, which is why today we spend more than we... we have a budget X to spend on health and we are spending almost double... (C10)

The lack of preparation of managers for scientific evidence-based decisions is another aspect that weakens the care provided to pregnant women with syphilis, as descriptions follow:

In fact, I have no information at the moment to tell you, because some things I might not even be able to answer. (C12)

We do not use scientific bases. We are always based on the diagnosis, really, from our own area. (C3)

DISCUSSION

This study revealed precarious situations in PHC services, placing pregnant women in a vulnerable condition with regard to vertical transmission of syphilis. The lack of supplies, especially educational materials for testing/treatment of syphilis cases in pregnant women, is strongly reflected in the results. The lack or insufficiency of access to diagnosis, treatment, and prevention supplies represents a violation of access to second-generation fundamental rights in the health field, constituting a health vulnerability⁽⁹⁾.

It is essential that PHC teams develop health education actions for which printed materials and social media are important resources/strategies that facilitate teaching and learning. These resources/strategies promote self-care and autonomy in health, allow for better communication between the health team and users, and contribute to the perception of the capacity to make people's lives vulnerable^(12,19).

Regarding the treatment of syphilis, this study revealed a shortage of benzathine penicillin in the UBS caused by the slow bidding process for purchasing this medication in the municipalities. This medication is the only choice for the treatment of syphilis, and its lack implies the progression of the disease and increased vertical transmission^(20,21). The availability of this drug in PHC is precarious in Brazilian municipalities and varies according to the region; the Northeast has the lowest coverage, where less than 50% of penicillin is administered to patients in more than half of the health teams⁽¹³⁾.

Furthermore, the shortage of penicillin in municipalities is caused by problems that start with its manufacture (production costs, pharmaceutical company policies, and export policies, among others) and end with the logistics of the drug reaching PHC.

In this sense, it is essential that the Brazilian government establish public policies that favor the national production of this drug, as well as expedite the acquisition processes and establish more assertive forecasting of the quantity needed to serve the population since most pharmaceutical companies are foreign and the acquisition processes are tied to regulations of the country of origin, which, in some cases, do not allow purchases of small quantities outside the pre-established period⁽²²⁾.

Another serious shortage problem that also directly affects the care of pregnant women with syphilis is associated with the sup-

plies used to diagnose the disease. Without these supplies, confirmation of the diagnosis of syphilis becomes impossible. This situation was also identified in Ghana, a country in Africa, where a reduction in the supply of diagnostic supplies was observed in contrast to the high population demand. The low stock of rapid tests in this country resulted in major challenges to achieving effective care for the population, and these institutional weaknesses arise from slow bidding processes, which have imprecise results as they depend on the availability of suppliers⁽²³⁾.

This context is consistent with the attributes of programmatic vulnerability, which involve insufficiency, precariousness, and impasses in the subject-social relationship, characterized by difficulties in services and direct interference in care⁽¹⁰⁾.

According to the coordinators' statements, there are also some alarming weaknesses related to human resources, which negatively impact the control of Congenital Syphilis. The staff of professionals working in PHC, in general, is untrained to care for pregnant women with suspected or confirmed syphilis, given the gaps in academic training and ongoing and continuing education.

For Practice-based Evidence, technical skills and competencies must be developed to support a care plan that serves the patient, respecting their specificities, individualities, and social contexts. It is necessary to develop technical skills and competencies in order to support a care plan that serves the patient, respecting their specificities, individualities, and social contexts. Thus, the lack of ongoing education on the subject compromises maternal and child care, not allowing for in-depth approaches in the context of syphilis⁽²⁴⁾.

In this sense, the planning and implementation of intersectoral actions are fundamental strategies to modify the health-disease process of this population, based on the mapping of living conditions and interventions, considering their historical, economic, and political contexts, which can make them more or less susceptible to a certain disease⁽⁹⁾.

The difficulty in monitoring families in situations of social inequality combined with the lack of embracement and inclusion of family members/partners in the stages of diagnosis, treatment, and rehabilitation of syphilis can interfere with therapeutic effectiveness, which, in turn, is directly related to the therapeutic bond for establishing responsibilities and the longitudinality of care⁽²⁵⁾. From this perspective, the high turnover of professionals triggered by the search for new learning opportunities or by the offer of better salary conditions makes it difficult to establish this bond, generates work overload, and, consequently, low coverage of the population at risk in relation to syphilis⁽²⁶⁾.

In this study, overwork was identified as a reason for dissatisfaction in the professional work environment. The inadequacy of the physical structure and the lack of work instruments affect the functionality of services and impair the team's performance. Furthermore, they contribute to the imprecision of the delimitation of geographic areas between health teams due to the seasonal increase in health needs, which hinders an effective and resolute work process⁽²⁷⁾.

This lack of coordination is more evident in the UBS located in rural areas, as presented by the coordinators in this study. The limited physical structure, geographic distance, and difficulty with transportation are barriers to access to health, a fundamental right that is neglected^(9,28).

Moreover, the lack of financial resources for transportation, the absence of family support for continued monitoring and treatment, as well as the lack of support for children's embracement during visits of pregnant women to the UBS⁽²⁹⁾ are aggravating conditions. Rural health is an important issue to increase the effectiveness of the territorial coverage of PHC and to act in situations of vulnerability, contributing to the achievement of the principles of the SUS and minimizing socio-environmental inequalities⁽²⁸⁾.

These socio-environmental conditions are complex, related to women's social vulnerability, and interfere in the work process and management of PHC. Minimizing these conditions of social vulnerability contributes to the prevention and control of Congenital Syphilis. On the other hand, the discontinuity of actions and programs educational makes it difficult for pregnant women to adhere to antenatal care and educational activities, compromising the quality of continued care⁽⁹⁾.

Another weakness identified in this study was the inconsistency of the database of the Notifiable Diseases Information System of the areas analyzed. The syphilis reporting process is an important tool that allows for the diagnosis and incorporation of measures to promote and control the disease and its complications.

Underreporting also affects other Brazilian states, demonstrating an inversion and inadequacy in the process of identifying new cases of syphilis in pregnant women, especially when the diagnosis occurs only during screening for labor, preventing its detection and treatment during antenatal care at the UBS to prevent complications for the dyad, such as the risk of vertical transmission. Furthermore, unfavorable outcomes for the fetus lead to difficulties in the data linkage process and a lack of criteria for classifying CS⁽¹⁴⁾.

The reporting of new cases of syphilis was also affected by the COVID-19 pandemic. In 2020, there was a dramatic interruption in clinical and Sexually Transmitted Diseases (STD) prevention services, reducing the number of appointments at UBS, diagnostic centers, and treatment, leading to a consequent drop in timely diagnosis and treatment of syphilis cases during pregnancy⁽³⁰⁾.

Transparency in sharing information is necessary for complete care and co-participation in decisions that favor health⁽³¹⁾. Therefore, coordination and interaction between service professionals, combined with the adoption of a referral and counter-referral system among the actors in the Healthcare Network for pregnant women with syphilis, are essential for effective care.

Furthermore, the management and coordination process of the UBS is based on continuous interactions to guide the work, goals, and strategies in order to make it comprehensive. Interpersonal relationships are strategies that facilitate the work and help resolve differences, avoiding misunderstandings⁽³²⁾.

Health managers in the municipalities must maintain close re-

relationships with the teams of professionals, establishing effective communication and sharing information about the health conditions in the territories.

The lack of preparation of managers, especially in relation to the scientific basis for decision-making and development of proposals for controlling Congenital Syphilis, was observed in this study. Primary Health Care requires agile, flexible, and organized managers who plan, evaluate, and remain close to the teams and are aware of the demands and assistance available in each unit⁽³³⁾.

Public policies developed in the area of prevention and control of Congenital Syphilis need to focus on local and regional vulnerabilities and be based on territorial dynamics, considering the singularity and sociocultural environment of each person. Only then, comprehensiveness and resolution in relation to socio-programmatic aggravating factors will be achieved⁽³⁰⁾.

Moreover, the mobilization of financial resources is essential. Government agencies must enhance and strengthen PHC, fostering the integration and partnerships of policies and favoring interdependence among stakeholders. Note that 31 low-income countries account for almost half of the global disease burden and invest only 5% of financial resources in health, which generates major discrepancies in the service network^(8,34,35).

There is an urgent need to develop/improve public policies to make them more effective, aiming for comprehensive and qualified care with the purpose of protecting the mother-child dyad^(10,36). From this perspective, social inequities and the lack of implementation of public policies have repercussions on the comprehensiveness and provision of care within the scope of PHC⁽⁹⁾.

These elements (public policies and financing) are linked to the concept of the State, integrating the list of subconcepts involved in the universe of health vulnerability. When there is underfunding in the health sector involving inadequate management of resources and their scarcity, as well as a lack of government commitment to public health, precarious conditions are strengthened, increasing health vulnerability⁽⁹⁾.

Regarding the limitations of this study, its development in only one municipality in the Brazilian Northeast makes it impossible to generalize the results to other regions of the country. However, qualitative studies do not have this purpose.

The results highlight the need to develop research with a broader approach to problems involving gestational syphilis and its vertical transmission in other Brazilian regions with the aim to support the planning of actions to control this condition.

CONCLUSION

There are programmatic situations in PHC services that indicate precarious infrastructure and work processes, as well as management weaknesses related to the prevention and control of syphilis. These highlight the vulnerability of pregnant women regarding the prevention and treatment of syphilis and favor vertical transmission.

In turn, the lack of human and material resources for diagnosis

and treatment of syphilis in pregnant women, weaknesses in educational and prevention actions, and geographical barriers impact the work process of services.

The health vulnerability conditions highlighted make it difficult to develop a comprehensive care plan aimed at addressing the vulnerabilities of pregnant women with syphilis within the scope of the Healthcare Network. The reporting, referral and counter-referral flows need to be ensured in order to strengthen the services of the network. It is also necessary to build humanitarian relationships between managers, workers, and the community to establish more effective communication.

The low funding of policies and programs affects access to fundamental rights and increases the vulnerable context experienced by pregnant women with syphilis.

REFERENCES

1. World Health Organization. Syphilis [Internet]. 2024 May 21 [cited 2024 Dec 14]. Available from: <https://www.who.int/news-room/fact-sheets/detail/syphilis>
2. Megli CJ, Coyne CB. Infections at the maternal-fetal interface: an overview of pathogenesis and defence. *Nat Rev Microbiol*. 2021 Aug 25;20(2):67-82. <https://doi.org/10.1038/s41579-021-00610-y>
3. Organização Pan-Americana da Saúde. Casos de sífilis aumentam nas Américas [Internet]. 2024 May 22 [cited 2024 Dec 14]. Available from: <https://www.paho.org/pt/noticias/22-5-2024-casos-sifilis-aumentam-nas-americas>
4. Ministério da Saúde (BR), Secretaria de Vigilância em Saúde e Ambiente, Departamento de HIV/Aids, Tuberculose, Hepatites Virais e Infecções Sexualmente Transmissíveis. Boletim Epidemiológico - Sífilis 2023 [Internet]. 2023 Oct [cited 2024 Dec 14]. 53 p. Available from: <https://www.gov.br/aids/pt-br/central-de-conteudo/boletins-epidemiologicos/2023/sifilis/boletim-sifilis2023.pdf/view>
5. Chan EYL, Smullin C, Clavijo S, Papp-Green M, Park E, Nelson M, et al. A qualitative assessment of structural barriers to prenatal care and congenital syphilis prevention in Kern County, California. *PLoS One*. 2021 Apr 1;16(4):e0249419. <https://doi.org/10.1371/journal.pone.0249419>
6. Lin KW. Closing Primary and Prenatal Care Gaps to Prevent Congenital Syphilis. *Am Fam Physician* [Internet]. 2020 July 15 [cited 2024 Dec 14];102(2):78-9. Available from: <https://www.aafp.org/afp/2020/0715/p78.html>
7. Bezerra MLMB, Fernandes FECV, Nunes JPO, Baltar SLSMA, Randau KP. Congenital syphilis as a measure of maternal and child healthcare, Brazil. *Emerg Infect Dis*. 2019 June 25;25(8):1469-76. <https://doi.org/10.3201/eid2508.180298>
8. Azevedo SGV, Florêncio RS, Cestari VRF, Moreira TMM. Situação programática na perspectiva da vulnerabilidade em saúde: validação de banco de itens. *Esc. Anna Nery*. 2022 May 9;26:e20210347. <https://doi.org/10.1590/2177-9465-EAN-2021-0347pt>
9. Florêncio RS, Moreira TMM. Modelo de vulnerabilidade em saúde: esclarecimento conceitual na perspectiva do sujeito-social. *Acta Paul Enferm*. 2021;34:eAPE00353. <https://doi.org/10.37689/acta-ape/2021A000353>
10. Azevedo SGV, Florêncio RS, Cestari VRF, Silva MAM, Pessoa VLMP, Moreira TMM. Vulnerabilidade programática na saúde: análise do conceito. *REME - Rev Min Enferm*. 2022 Dec 2;26:e-146. <https://doi.org/10.35699/2316-9389.2022.39021>
11. Azevedo SGV, Florêncio RS, Moreira TMM. Análise semântica de um banco de itens sobre situação programática de vulnerabilidade em saúde. *Rev Bras Promoc Saúde*. 2023 Dec 15;36:13294. <https://doi.org/10.5020/18061230.2023.13294>

12. Moraes IL, Arão AECH, Sousa GDLS, Santos LGS, Mendes FS, Torres FS. Sífilis Congênita: elaboração de um material educativo para gestantes no município de Belo Horizonte. *Revista Brasileira de Educação e Saúde*. 2023 Jan 17;13(1):1-9. <https://doi.org/10.18378/rebes.v13i1.9146>
13. Figueiredo DCMM, Figueiredo AM, Souza TKB, Tavares G, Vianna RPT. Relação entre oferta de diagnóstico e tratamento da sífilis na atenção básica sobre a incidência de sífilis gestacional e congênita. *Cad Saúde Pública*. 2020 Mar 23;36(3):e00074519. <https://doi.org/10.1590/0102-311x00074519>
14. Festa L, Prado MF, Jesuino ACS, Balda RCX, Tayra A, Sañudo A, et al. Underreporting of unfavorable outcomes of congenital syphilis on the Notifiable Health Conditions Information System in the state of São Paulo, Brazil, 2007-2018. *Epidemiol Serv Saude*. 2023 July 14;32(2):e2022664. <https://doi.org/10.1590/s2237-96222023000200007>
15. Secretaria de Saúde do Ceará. Boletim epidemiológico. Sífilis [Internet]. 2022 [cited 2024 Dec 14]. 26 p. Available from: https://www.saude.ce.gov.br/wp-content/uploads/sites/9/2018/06/boletim_sifilis_21102022.pdf
16. Gil AC. Métodos e técnicas de pesquisa social. 6th ed. São Paulo: Atlas; 2017.
17. Bardin L. Análise de Conteúdo. São Paulo: Edições 70; 2016.
18. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care*. 2007 Sep 14;19(6):349-57. <https://doi.org/10.1093/intqhc/mzm042>
19. Patja K, Veld TH, Arva D, Bonello M, Pees RO, Soethout M, et al. Health promotion and disease prevention in the education of health professionals: a mapping of European educational programmes from 2019. *BMC Med Educ*. 2022 Nov 11;22:778. <https://doi.org/10.1186/s12909-022-03826-5>
20. World Health Organization (WHO). WHO Guidelines for the Treatment of *Treponema pallidum* (syphilis) [Internet]. Geneva: World Health Organization; 2016 [cited 2024 Dec 14]. 49 p. Available from: <https://www.who.int/publications/i/item/9789241549714>
21. Ministério da Saúde (BR), Secretaria de Vigilância em Saúde Departamento de Doenças de Condições Crônicas e Infecções Sexualmente Transmissíveis. Protocolo clínico e diretrizes terapêuticas para atenção integral às pessoas com Infecções Sexualmente Transmissíveis (IST) [Internet]. Brasília: Ministério da Saúde (BR); 2022 [cited 2024 Dec 14]. 211 p. Available from: https://www.gov.br/aids/pt-br/central-de-conteudo/pcdts/2022/ist/pcdt-ist-2022_isbn-1.pdf
22. Shafiq N, Pandey AK, Malhotra S, Holmes A, Mendelson M, Malpani R, et al. Shortage of essential antimicrobials: a major challenge to global health security. *BMJ Global Health*. 2021 Nov 1;6(11):e006961. <https://doi.org/10.1136/bmjgh-2021-006961>
23. Kuupiel D, Tlou B, Bawontuo V, Drain PK, Mashamba-Thompson TP. Poor supply chain management and stock-outs of point-of-care diagnostic tests in Upper East Region's primary healthcare clinics, Ghana. *PLoS One*. 2019 Feb 27;14(2):e0211498. <https://doi.org/10.1371/journal.pone.0211498>
24. Mosca G, Cappi V, D'apice C, Rossi S, Artioli G, Sarli L. Myanmar health professionals' educational needs: a pilot study. *Acta Biomed*. 2020 Mar 13;91(suppl 2):35-44. <https://doi.org/10.23750/abm.v91i2-S.9344>
25. Barbosa MIS, Bosi MLM. Vínculo: um conceito problemático no campo da Saúde Coletiva. *Physys*. 2017 Oct-Dec;27(04):1003-22. <https://doi.org/10.1590/S0103-73312017000400008>
26. Rocha AFB, Araújo MAL, Miranda AE, Ponce de Leon RG, Silva Junior GB, Vasconcelos LDPG. Management of sexual partners of pregnant women with syphilis in northeastern Brazil – a qualitative study. *BMC Health Serv Res*. 2019 Jan 24;19:65. <https://doi.org/10.1186/s12913-019-3910-y>
27. Silva FL, Lorenzi LJ, Bisetto LA, Belo LF, Gomes GAO, Mininel VA. Satisfação no trabalho de trabalhadores da atenção primária à saúde: um estudo exploratório. *REME - Rev Min Enferm* [Internet]. 2022 Dec 21 [cited 2024 Dec 14];26:e-1471. Available from: <https://periodicos.ufmg.br/index.php/rem/article/view/37894>
28. Franco CM, Giovanella L, Bousquat A. Atuação dos médicos na Atenção Primária à Saúde em municípios rurais remotos: onde está o território? *Ciênc. saúde coletiva*. 2022 Sept 3;28(3):821-36. <https://doi.org/10.1590/1413-81232023283.12992022>
29. Lima FNM, Silva MAM, Mesquita ALM, Mazza VA, Freitas CASL. Rede de apoio social de jovens mães de filhos diagnosticados com sífilis congênita. *Ciênc. saúde coletiva*. 2023 Apr 26;28(8):2273-82. <https://doi.org/10.1590/1413-81232023288.05972023>
30. Goyal M, Singh P, Singh K, Shekhar S, Agrawal N, Misra S. The effect of the COVID-19 pandemic on maternal health due to delay in seeking health care: Experience from a tertiary center. *Int J Gynaecol Obstet*. 2020 Oct 31;152(2):231-5. <https://doi.org/10.1002/ijgo.13457>
31. Kneck A, Flink M, Frykholm O, Kirsebom M, Ekstedt M. The information flow in a healthcare organisation with integrated units. *Int J Integr Care*. 2019 Sept 26;19(3):20. <https://doi.org/10.5334/ijic.4192>
32. Sousa ANA, Shimizu HE. Coordenação na atenção básica e integração na rede de atenção à saúde: em que avançamos? *Saúde em Debate* [Internet]. 2024 Dec 9 [cited 2025 Jan 01];48(spe2):e8784. Available from: <https://www.scielo.br/j/sdeb/a/Bh9xGdBx5rTgQnPWc5QZrDS/>
33. Scherer MDA, Leite TA, Santos RR, Prado NMBL. Análise dos problemas vinculados aos padrões de qualidade da atenção primária no Distrito Federal. *Saúde Debate*. 2024 Sept 23;48(142):e8607. <https://doi.org/10.1590/2358-289820241428607P>
34. Misra V, Sedig K, Dixon DR, Sibbald SL. Prioritizing coordination of primary health care. *Can Fam Physician* [Internet]. 2020 June [cited 2024 Dec 14];66(6):399-403. Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC7292521/>
35. Rhatigan Jr J. 28 - Health Systems and Health Care Delivery. In: Ryan ET, Hill DR, Solomon T, Aronson NE, Endy TP, editors. *Hunter's Tropical Medicine and Emerging Infectious Diseases* (Tenth Edition). Elsevier; 2020 [cited 2024 Dec 14]. p. 214-8. Available from: <https://doi.org/10.1016/B978-0-323-55512-8.00028-4>
36. Martinelli NL, Costa AAS, Scatena JHG, Soares NRF, Charbel SC, Castro ML, et al. Regionalização e Rede de Atenção à Saúde em Mato Grosso. *Saude soc*. 2022 Dec 5;31(4):e210195pt. <https://doi.org/10.1590/S0104-12902022210195pt>

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Conflict of Interest

None.

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