

## Search behavior for health services for the detection of tuberculosis

Comportamento de busca por serviços de saúde para a detecção da tuberculose

Comportamiento de búsqueda por los servicios de salud para la detección de la tuberculosis

Jéssica Oliveira Tomberg<sup>I</sup>, Lílian Moura de Lima Spagnolo<sup>II</sup>, Jenifer Härter<sup>III</sup>, Martina Dias da Rosa Martins<sup>IV</sup>, Roxana Isabel Cardozo Gonzales<sup>V</sup>

**Abstract: Objective:** to investigate the detection of pulmonary tuberculosis from the search behavior for health services in towns located in Rio Grande do Sul. **Methods:** cross-sectional and descriptive study conducted between 2013 and 2014, through interviews with 290 people with pulmonary tuberculosis in towns of the south region of the country. When analyzing data, we used descriptive statistics, designing search behavior flows in search of the diagnosis of the disease. **Results:** specialized services were used by 39.7% (115) of people for the first visit, offering sputum smear microscopy to 64.1% (186), chest X-ray to 57.2% (166) and testing for the human immunodeficiency virus to 62.7% (182). We found that 37.5% (109) were diagnosed in the first health service sought and 62.4% (181) sought other services. **Conclusion:** the detection of pulmonary tuberculosis takes place, primarily, in specialized services, followed by the Emergency Care Units and the Primary Health Care Units.

**Descriptors:** Tuberculosis; Health Services Accessibility; Health Care Quality, Access, and Evaluation; Primary Health Care; Public health

**Resumo: Objetivo:** investigar a detecção da tuberculose pulmonar a partir do comportamento de busca por serviços de saúde em municípios do Rio Grande do Sul. **Métodos:** estudo transversal descritivo, realizado entre 2013 e 2014, mediante entrevistas com 290 pessoas com tuberculose pulmonar de municípios da região sul do país. Na análise dos dados, utilizou-se estatística descritiva, construindo-se fluxos de comportamento de busca do diagnóstico da doença. **Resultados:** os serviços especializados foram utilizados por 39,7% (115) das pessoas para o primeiro atendimento, ofertando baciloscopia de escarro para 64,1% (186), radiografia de tórax para 57,2% (166) e testagem para vírus da imunodeficiência humana para 62,7% (182). Verificou-se que 37,5% (109) foram diagnosticadas no primeiro serviço de saúde procurado e 62,4% (181) buscaram outros serviços. **Conclusão:** a

<sup>I</sup> Nurse. PhD in Nursing. Public Servant from the Municipal Government of Pelotas, Pelotas, RS, Brazil. e-mail: jessicatomborg@hotmail.com. ORCID: <https://orcid.org/0000-0002-1194-9970>

<sup>II</sup> Nurse. PhD in Nursing. Professor from the Nursing Department of the Federal University of Pelotas. Pelotas, RS, Brazil. e-mail: lima.lilian@gmail.com. ORCID: <https://orcid.org/0000-0003-2070-6177>.

<sup>III</sup> Nurse. PhD in Nursing. Professor from the Nursing Department of the Federal University of Pampa. Uruguaiana, RS, Brazil. e-mail: jeniferharter@hotmail.com. ORCID: <https://orcid.org/0000-0002-9130-4290>.

<sup>IV</sup> Nursing Student from the Federal University of Pelotas. Pelotas, RS, Brazil. e-mail: martinadrm@hotmail.com. ORCID: <https://orcid.org/0000-0002-8835-6284>.

<sup>V</sup> Nurse. Post-PhD in Public Health Nursing. Professor from the Nursing School of the Federal University of Goiás. Goiânia, GO, Brazil. e-mail: roxana\_cardozo@hotmail.com. ORCID: <https://orcid.org/0000-0001-7180-897X>



detecção da tuberculose pulmonar se dá, prioritariamente, nos serviços especializados, seguidos pelas Unidades de Pronto Atendimento e pelas unidades de Atenção Primária à Saúde.

**Descritores:** Tuberculose; Acesso aos Serviços de Saúde; Qualidade, Acesso e Avaliação da Assistência à Saúde; Atenção Primária à Saúde; Saúde Pública

**Resumen: Objetivo:** investigar la detección de la tuberculosis pulmonar basándose en el comportamiento de búsqueda por servicios de salud en ayuntamientos de Rio Grande do Sul. **Métodos:** estudio transversal descriptivo, realizado entre 2013 y 2014, mediante entrevistas con 290 personas con tuberculosis pulmonar en ayuntamientos de la región sur del país. En el análisis de los datos, se utilizó estadística descriptiva, construyendo flujos de comportamiento de búsqueda del diagnóstico de la enfermedad. **Resultados:** los servicios especializados se utilizaron por el 39,7% (115) de las personas para la primera atención, ofreciendo microscopía de esputo al 64,1% (186), radiografía de tórax al 57,2% (166) y pruebas de detección del virus de la inmunodeficiencia humana al 62,7% (182). Se encontró que el 37,5% (109) fueron diagnosticados en el primer servicio de salud buscado y el 62,4% (181) buscaron otros servicios. **Conclusión:** la detección de la tuberculosis pulmonar ocurre, prioritariamente, en los servicios especializados, seguidos por las Unidades de Pronta Atención y las unidades de Atención Primaria de Salud.

**Descriptorios:** Tuberculosis; Accesibilidad a los Servicios de Salud; Calidad, Acceso y Evaluación de la Atención de Salud; Atención Primaria de Salud; Salud Pública

## Introduction

Tuberculosis is part of the public health policy agenda of the World Health Organization (WHO) because it is characterized as a chronic, infectious and contagious condition with high mortality rates. In 2015, the WHO approved the “*End TB*” strategy, which intends to eliminate tuberculosis as a public health problem (<1 case per 100,000 inhabitants) and to reduce 95% of tuberculosis deaths by 2035.<sup>1</sup>

Brazil is part of the group of countries that concentrate 50% of tuberculosis cases in the world. In 2018, the country had an incidence rate of 34.8 cases per 100 thousand inhabitants, as well as a mortality rate of 2.18 deaths per 100 thousand inhabitants in 2017.<sup>2-3</sup> In order to reduce these indicators and align control actions with the goals proposed by the WHO, the National Tuberculosis Control Program (PNCT, as per its Portuguese acronym) defined prevention and care centered on people with tuberculosis as one of the pillars of action, aiming at diagnosing all forms of illness precociously.<sup>3-4</sup>

In this sense, the early detection of respiratory symptoms (people with cough for three weeks or more) is crucial, especially in Primary Health Care (PHC), which, due to its potential for geographic location and work process, has the responsibility in the organization and coordination of care to the users. However, health care actions against tuberculosis constitute a commitment of all health services.<sup>3-5</sup> That is why it is necessary that they work in an integrated manner and have pre-established flows and laboratory support.

The detection of tuberculosis is established when there is a match between the provision of services and the health needs of individuals, involving aspects of users, including economic, social and cultural characteristics, as well as structural, organizational and managerial characteristics of health units.<sup>6-10</sup> Operational research conducted in Brazil and internationally have highlighted difficulties in accessing respiratory symptoms in the early detection of tuberculosis.<sup>7-11</sup> There is evidence of the non-resolution of the case in the first health service sought, which is influenced by the type of service provided at the location. This situation determines the search behavior of people needing care and the delay in diagnosing the disease.<sup>7</sup>

In view of these considerations, it is relevant to know the search behavior for the diagnosis of tuberculosis from the health services sought by people with respiratory symptoms of this disease in towns located in Rio Grande do Sul. This will be essential to know the strengths and weaknesses of tuberculosis care, identifying the services that make the diagnosis in the first contact of the user. We should consider that little is known about the search behavior for respiratory symptoms in the process of tuberculosis detection in the state of Rio Grande do Sul. As a research question, we have: how does the search for care for people with respiratory symptoms of tuberculosis take place in towns located in Rio Grande do Sul?

Thus, this study intended to investigate the detection of pulmonary tuberculosis from the search behavior for health services in towns located in Rio Grande do Sul.

## Method

Descriptive and cross-sectional study performed on the basis of a multicenter research, which had the data collection with the extension of 12 months, taking place between 2013 and 2014 in the towns of Canoas, Pelotas, Santa Cruz do Sul and Sapucaia do Sul, located in the state of Rio Grande do Sul. These towns were selected because they are part of the list of priority municipalities for tuberculosis control in Rio Grande do Sul and have the PNCT municipalization. In addition, they were part of the multicenter study in partnership with higher education institutions in each municipality. With regard to tuberculosis data, in 2014, the town of Canoas reported 179 new cases of pulmonary tuberculosis, Pelotas 141, Sapucaia do Sul 61 and Santa Cruz do Sul 42.<sup>12-13</sup>

The population was composed of all individuals with pulmonary tuberculosis who started treatment during the data collection period. We applied the following inclusion criteria: having a diagnosis of pulmonary tuberculosis; undergoing initial treatment (up to three months); being 18 years of age or older; having no cognitive difficulties that would make it impossible to apply the form; and not being institutionalized.

In order to hold the data collection procedures, firstly, people diagnosed with tuberculosis were identified during the data collection period, through the epidemiological surveillance of each municipality, and they were searched for in the health services where they were being followed-up. for the treatment of tuberculosis. The interviews were performed by graduate students, previously trained, using a structured questionnaire, previously coded.

The variables used were: number of times that they sought health services; types of health services sought until the diagnosis of tuberculosis; health service that diagnosed the disease; and the health service that requested tests (chest X-ray, sputum smear microscopy and anti-HIV, due to high rates of tuberculosis infection in HIV-positive individuals related to issues of immunity changes).<sup>5</sup>

The services were grouped into: PHC units (Primary Health Care Units, with and without the Community Health Workers Program, and units with a Family Health Strategy); specialized services (SS) (encompassing points of secondary and tertiary care, including outpatient clinics, clinics, medical offices, and hospitals); and Emergency Care Units (ECU) (consisting of urgency and emergency units).

In order to hold the analysis of this study, those interviewed who had not informed the first service sought were excluded from the sample in such a way as to enable the design of the search behavior flow. The data were inserted in a database prepared in the *Microsoft Excel*<sup>®</sup> program and analyzed in the *Stata*<sup>®</sup> program, version 13.0, using descriptive statistics with relative and absolute frequency distribution of the aforementioned variables. We used the median as a measure of central tendency for variables without normal distribution. Based on the results, we designed a flowchart of the search behavior of people by service modality until the diagnosis was obtained. In order to accomplish this design, we used the results of the variables “types of health services sought until the diagnosis of tuberculosis” and “health service that diagnosed the disease”, which allowed us to identify among the services sought the one who made the diagnosis.

In the study, we complied with the ethical precepts of Resolution 466/12 of the National Health Council.<sup>14</sup> The project was submitted to *Plataforma Brasil* with favorable opinion nº 702.283 on June 20<sup>th</sup>, 2013. The structured form was applied to participants in a private environment, upon the agreement of the interviewees and the signing of the Free and Informed Consent Form in two copies.

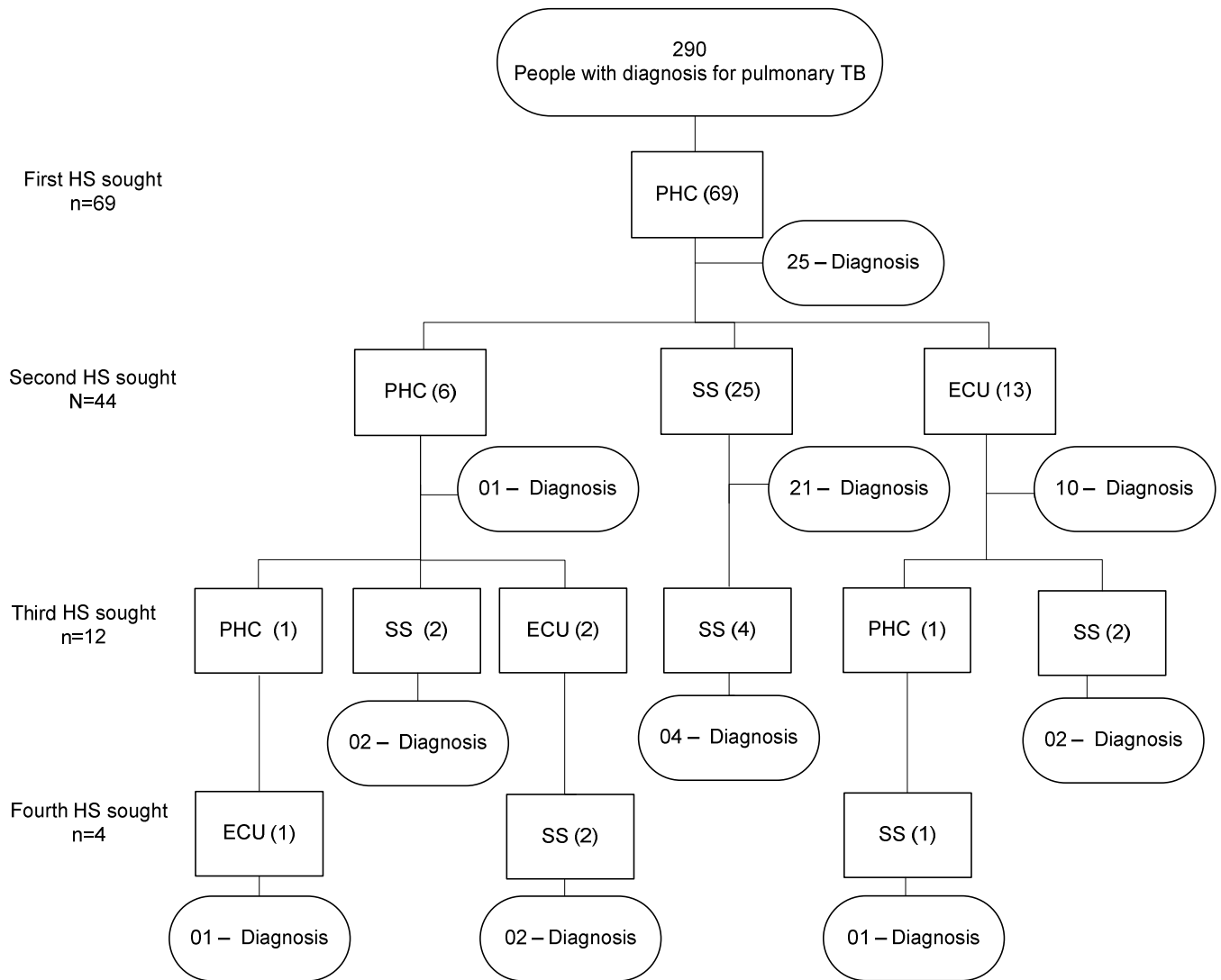
## Results

The sample resulted in 290 interviews analyzed. Of the total number of interviewees, there was a median of two visits to health services until the diagnosis was obtained. We found

that 23.8% (69) chose PHC as the first health service sought in the face of respiratory symptoms, while 39.7% (115) sought SS and 36.5% (106) chose to start their health care from ECU units. PHC diagnosed 16.2% (47) of the interviewees, SS 66.9% (194) and ECU units 16.9% (49).

Among the 69 people who started the search for care in PHC (Figure 1), 36.3% (25/69) received the diagnosis in the first PHC unit sought and 63.7% (44/69) sought a second health service. Among these, 44 who sought a second service, as they remained without the diagnosis, 72.7% (32/44) received it in the second service. Thus, 12 people remained without the diagnosis, who sought a third service. Of these, 66.6% (8/12) were diagnosed at that time, leaving 41.6% (4/12), who made the diagnosis in the fourth health service sought.

**Figure 1** – Search behavior flow for health services until the diagnosis of tuberculosis was obtained, started from PHC as the first choice, Rio Grande do Sul, Brazil, 2014 (n=69)

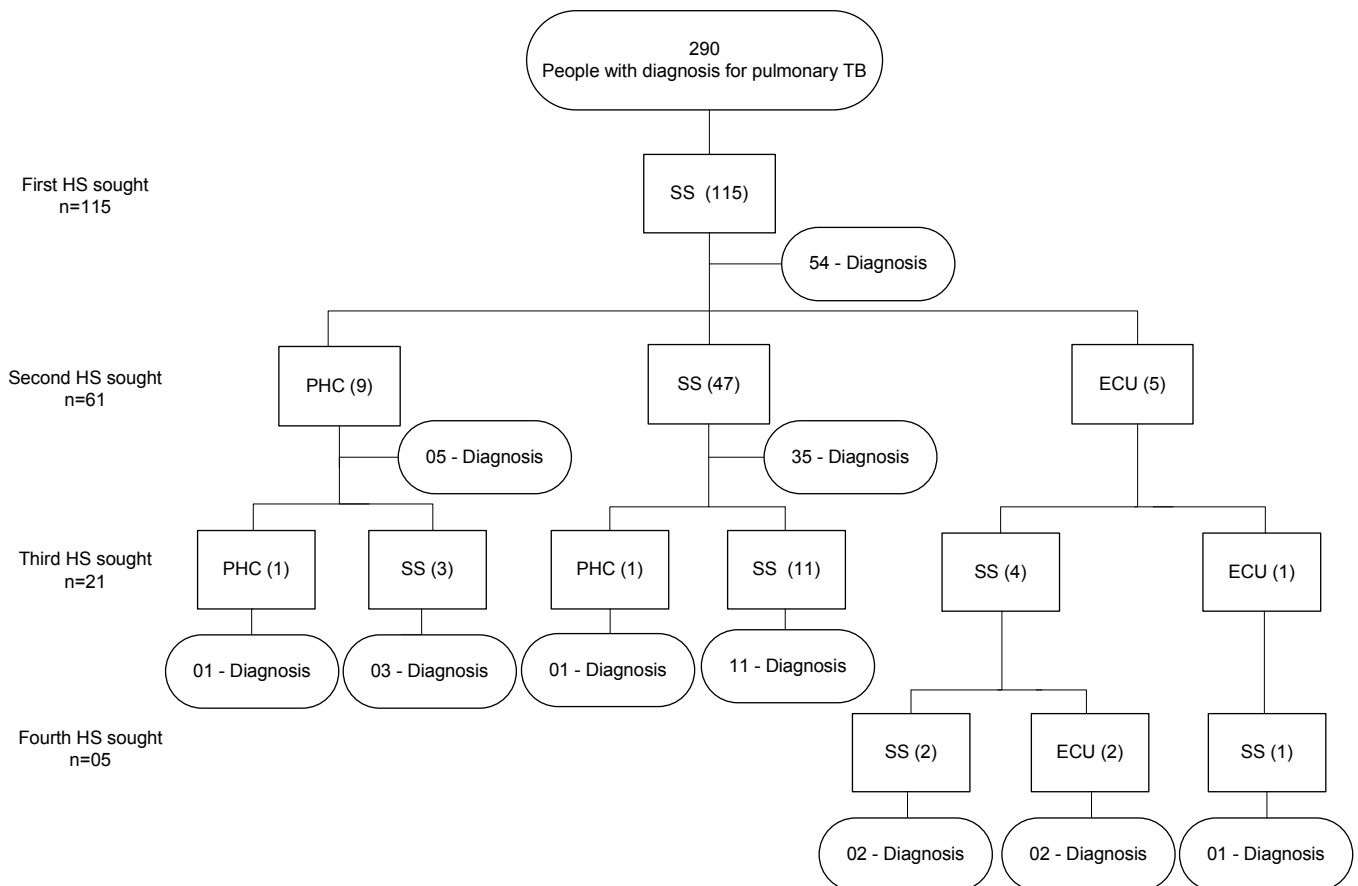


**Note:** Health Services (HS), Primary Health Care (PHC), Specialized Services (SS), Emergency Care Unit (ECU).

Figure 2 shows the search behavior of 115 people who chose SS as the first service option. Of these, 47.0% (54/115) were diagnosed in the first SS sought and 53.0% (61/115) sought a second health service. Of the 61 people who sought the second service, 65.5% (40/61) were diagnosed and 34.4% (21/61) remained undiagnosed. The search for the third health service happened for 21

people, at the time 76.1% (16/21) were diagnosed and 23.8% (5/21) of the people needed to accomplish the fourth search for service to obtain the diagnosis.

**Figure 2** – Search behavior flow for health services until the diagnosis of tuberculosis was obtained, started from SS as the first choice, Rio Grande do Sul, Brazil, 2014 (n=115)

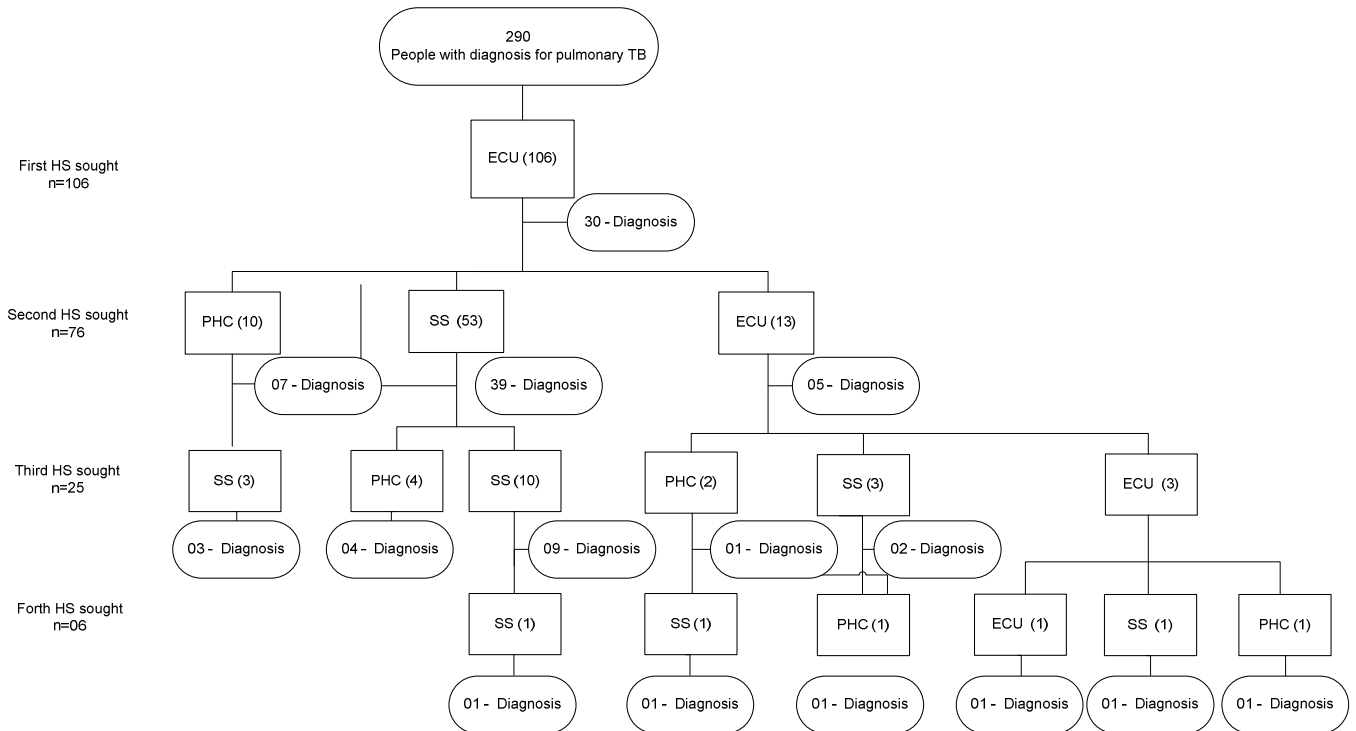


**Note:** Health Services (HS), Primary Health Care (PHC), Specialized Services (SS), Emergency Care Unit (ECU).

Figure 3 depicts the search behavior flow of 106 interviewees, who chose ECU units as their first service. Of these, 28.3% (30/106) obtained the diagnosis in the ECU units after the first visit and 71.7% (76/106) sought the second health service. In this second search, 67.1% (51/76) were diagnosed, of which 76.5% (39/51) in SS. Of the 32.9% (25/76) people who made a third search for health services in search of diagnosis, 76.0% (19/25) were diagnosed, 73.7% (14/19) in SS. The remaining 24.0% (6/25) sought a fourth service. At that time, 50% (3/6) were diagnosed in SS.



**Figure 3** - Search behavior flow for health services until the diagnosis of tuberculosis was obtained, started from the ECU units as the first choice, Rio Grande do Sul, Brazil, 2014 (n=106)



**Note:** Health Services (HS), Primary Health Care (PHC), Specialized Services (SS), Emergency Care Unit (ECU).

Table 1 shows the tests offered according to the first health service sought. When considering the 290 interviewees, we found that SS were responsible for 64.1% (186/290) of the requests for sputum smear microscopy, 57.2% (166/290) of the requests for chest X-ray and 62.7% (182/290) for anti-HIV tests.

**Table 1** – Requests for tuberculosis tests and diagnoses according to the first health service sought, Rio Grande do Sul, Brazil, 2014 (n=290)

Health services that offered the tests	First health service sought							
	PHC (69)		SS (115)		ECU (106)		Total (290)	
	n	%	n	%	n	%	n	%
Sputum smear microscopy								
PHC	40	58	10	8.7	12	11.3	62	21.4
SS	26	37.7	91	79.1	69	65.1	186	64.1
ECU	2	2.9	-	-	17	16.1	19	6.5
None	1	1.4	14	12.2	8	7.5	23	8
Chest X-ray								
APS	35	50.7	7	6.1	9	8.4	51	17.6
SS	26	37.7	98	85.2	42	39.7	166	57.2
ECU	6	8.7	3	2.6	54	50.9	63	21.7
None	2	2.9	7	6.1	1	1	10	3.5
Anti-HIV								
PHC	20	28.9	12	10.4	14	13.2	46	15.9
SS	38	55	77	67	67	63.2	182	62.7
ECU	2	2.9	-	-	10	9.4	12	4.1
None	9	13.2	26	22.6	15	14.1	50	17.3

**Note:** Primary Health Care (PHC), Specialized Services (SS), Emergency Care Unit (ECU).

Among the 69 people who started the search for diagnosis from PHC, we noticed that this level of care was responsible for 58.0% (40/69) of the requests for sputum smear microscopy and 50.7% (35/69) of the requests for chest X-ray, leaving only 28.9% (20/69) of requests for anti-HIV tests. Regarding the 106 who sought the ECU units as the first service for health care, chest X-ray was the test predominantly requested by 50.9% (54/106) of the people. For the 115 patients who started treatment by means of SS, 79.1% (91/115) made requests for sputum smear microscopy, 85.2% (98/115) for chest X-ray and 67.0% (77/115) for anti-HIV tests.

## Discussion

In view of the results of the research, we noted weaknesses in the detection of tuberculosis, since, when analyzing the search behavior, more than half of the people with tuberculosis needed to search for more than one service to carry out the diagnosis, producing

diversified flows in the health services network until the disease is confirmed. We should recognize that the need to seek various services and the type of service sought for the first care are determinant for the delay in the diagnosis of the disease.<sup>7-8</sup>

When analyzing the search behavior for care, given the first symptoms of the illness, the results show that the PHC units were the least sought after among the interviewees, with SS being the most sought after for the first care, followed by the ECU units. Similar results were identified in a survey conducted in 2010, in 7 Brazilian municipalities, and in a survey conducted in Ethiopia, in 2014, where the authors identified SS as the ones chosen for the first visit. Conversely, a study conducted in 2013, in the 26 Brazilian capitals and in the Federal District, highlights the PHC units as the preferred choice for the first visit.<sup>10,15-16</sup> In light of the foregoing, we can understand that there is no standard search behavior for care in a given health service.

The factors that limit the search for PHC units were emphasized in a survey conducted in a country of the African continent, being related to the non-resolution of health needs and the lack of material and human resources.<sup>17</sup> Similarly, these factors were highlighted in a survey conducted in Brazil, adding to the inexistence of previous links and the difficulties in achieving consultations and in accomplishing tests.<sup>18</sup>

The results showed that the definition of the diagnosis of tuberculosis takes place mainly in SS, followed by the ECU units and the PHC units. Similar results were noted in other studies highlighting weaknesses of PHC units in the sense of providing a timely diagnosis of the disease when they constitute the first service sought.<sup>19-20</sup> This is due to the fact that professionals working in PHC units do not suspect tuberculosis in the first consultation, do not request sputum smear microscopy in the face of people with respiratory symptoms and refer them to other services.<sup>2,11,19</sup> Conversely, it is possible to justify the low detection of tuberculosis in the ECU units due to the fact that assistance is centered on the care of acute health

situations, the insufficiency of human resources for the high quantity of services and the continuing education practices diverted from the tuberculosis problem.

Regarding the best results obtained by SS for the detection of tuberculosis, in the current study setting, we believe that they are also related to the form of organization of tuberculosis care, in three of the four municipalities that integrate the research, which are characterized by the centralized offer of tuberculosis care in outpatient clinics of the Municipal Tuberculosis Control Program (PMCT, as per its Portuguese acronym), where the role of PHC is to develop actions towards the detection of the disease.

Nevertheless, we should underline that the service in such outpatient clinics also includes the development of actions towards the detection of cases. Both diagnosis and treatment in these services happen by spontaneous demand or by referrals. We believe that because they have teams prepared for care directed to tuberculosis, there is early detection and, consequently, greater search for assistance in these services in the face of respiratory symptoms. We should also highlight that these health services are equipped with a physical structure and appropriate equipment, with a view to providing a quick diagnosis of the disease.

In addition, the referrals from PHC units to SS have already been highlighted as a result of the high number of searches for this type of service.<sup>15,19</sup> In this sense, it is important to underline that referrals should be guided by defined municipal flows, which include the participation of these units in the detection of tuberculosis and in the coordination of care.

We should emphasize that tuberculosis is a condition of care sensitive to PHC, as it is a chronic condition of prolonged treatment, at least six months, which requires the proximity of the service of the sick person, in such a way as to coordinate his/her assistance. However, the search for these services is influenced by aspects of health systems organizations, which can facilitate or limit them, as well as the consequent acceptability of services by people with tuberculosis.<sup>6</sup> We can note that, despite governmental efforts to consolidate the care model

based on PHC, its implementation is still a challenge for health management, since there are limitations in access, mostly related to the weaknesses of attributes essential of these units.<sup>18</sup>

In this sense, regardless of the point of care, the important role of health services management is highlighted in keeping health teams always aware of the issue of tuberculosis, recognizing this disease as a public health problem and acting in line with the programmatic control actions.<sup>11,15</sup> To that end, municipal managers need to value the issue of early detection of tuberculosis, providing support for health teams at the structural, organizational and operational levels. We can assert that care flows without the inclusion of PHC as a guide in the process of tuberculosis detection are inefficient for early diagnosis, and this fact is directly related to the characteristics of the care model aimed at inserting professionals in the community environment, enabling active search actions.<sup>9</sup>

Regarding the offer of tests, SS stood out by making the greatest contribution of requests for sputum smear microscopy, chest X-ray and anti-HIV test. Among the tests, the least offered was the anti-HIV test. In this context, we can notice that health services do not comply with national standards for tuberculosis control, since it is recommended that the first service sought, upon suspicion of tuberculosis, needs to make an immediate request for sputum smear microscopy, chest X-ray and anti-HIV test.<sup>5</sup> We should underline that, since 2013, public health services have had the HIV rapid test kits available, which optimize the accomplishment of these tests, without the need for referral to the laboratory network.<sup>5</sup>

The results obtained in relation to the requests for tests, by the first health service sought, depict the low suspicion of health teams, in the first contact, for tuberculosis, which generates other diagnostic hypotheses, the lack of essential tuberculosis tests and the indicative of other treatments.<sup>15,20</sup> Such reality undermines the interruption of the chain of transmission of the disease, burdens the health system with ineffective treatments and even worsens the clinical condition of the person with tuberculosis, often requiring hospitalizations for the management of complications.

The results of this research indicate the importance of assessing the process of tuberculosis detection in health services as a tool to support the planning of tuberculosis control actions, which contributes to the discussion in the formulation of the care line of tuberculosis, since they highlighted the need to reorganize tuberculosis care, taking into account the PHC units, and its effectiveness as the care coordinator of the care network for people with the disease. In addition, they reflect the need to change health practices in the process of tuberculosis detection based on the awareness of health professionals about the disease problem.

## **Conclusion**

The present results highlight that the search behavior for care in the first symptoms of the disease takes place, primarily, through SS, with 194 diagnoses, followed by the ECU units, with 49 diagnoses, and by the PHC units, with 47 diagnoses. We also found a preference for SS, followed by the ECU units and, finally, the PHC units. The offer of tests, element essential for the diagnosis of the disease, took place, mainly, by means of SS. We can consider that the flow of the search for care in health services until the detection of tuberculosis was more difficult for those people who chose the first service in the ECU unit.

Accordingly, the study shows the need to invest in the resolution of PHC units to make them a viable and priority option in the search for care among people with tuberculosis. It is urgent to provide health services with physical and functional qualification, as well as human resources, in order to meet the political responsibility assumed by managers for the elimination of tuberculosis as a public health problem in Brazil. This research has as a limitation a possible memory bias associated with the responses related to the health services sought, the services that requested the tests and also those who diagnosed tuberculosis, although the interview was conducted at the beginning of the treatment.

## References

1. World Health Organization (WHO). Stop TB Partnership. Global plan to end TB. The paradigm shift 2016-2020 [Internet]. Geneva: World Health Organization; 2015 [cited 2019 Dec 18]. Available from: <http://www.stoptb.org/global/plan/plan2/>
2. Ministério da Saúde (BR). Brasil Livre da Tuberculose: evolução dos cenários epidemiológicos e operacionais da doença. *Boletim Epidemiológico*. 2019;50(9):1-18.
3. Ministério da Saúde (BR), Secretaria de Vigilância em Saúde. Brasil livre da tuberculose: evolução dos cenários epidemiológicos e operacionais da doença. *Boletim Epidemiológico*. 2019;50(9):1-18.
4. Ministério da Saúde (BR), Secretaria de Vigilância em Saúde, Departamento de Vigilância das Doenças Transmissíveis. Brasil Livre da Tuberculose: plano nacional pelo fim da tuberculose como problema de saúde pública. Brasília (DF): Ministério da Saúde; 2017.
5. Ministério da Saúde (BR), Secretaria de Vigilância em Saúde, Departamento de Vigilância das Doenças Transmissíveis. Manual de recomendações para o controle da tuberculose no Brasil. Brasília (DF): Ministério da Saúde; 2018.
6. Sacramento DS, Lavor DCBS, Oliveira LRT, Gomes APBL, Gonçalves MJF. Organização dos serviços de saúde para o diagnóstico e tratamento dos casos de tuberculose em Manaus, Amazonas, 2014. *Epidemiol Serv Saúde (Online)*. 2019;28(2):e2017500. doi: <https://doi.org/10.5123/S1679-49742019000200007>
7. Peri AM, Bernasconi DP, Galizzi N, Matteelli A, Codecasa L, Giorgio V, et al. Determinants of patient and health care services delays for tuberculosis diagnosis in Italy: a cross-sectional observational study. *BMC Infect Dis*. 2018;18(1):690. doi: <https://doi.org/10.1186/s12879-018-3609-4>
8. Bogale S, Diro E, Shiferaw AM, Yenit MK. Factors associated with the length of delay with tuberculosis diagnosis and treatment among adult tuberculosis patients attending at public health facilities in Gondar town, Northwest, Ethiopia. *BMC Infect Dis*. 2017;17(1):145. doi: <https://doi.org/10.1186/s12879-017-2240-0>
9. Spagnolo LML, Tomberg JO, Vieira DA, Gonzales RIC. Detection of tuberculosis: respiratory symptoms flow and results achieved. *Rev Bras Enferm*. 2018;71(5):2543-51. doi: <http://dx.doi.org/10.1590/0034-7167-2017-0457>
10. Gebreegziabher SB, Bjune GA, Yimer SA. Patients' and health system's delays in the diagnosis and treatment of new pulmonary tuberculosis patients in West Gojjam Zone, Northwest Ethiopia: a cross-sectional study. *BMC Infect Dis*. 2016;16(11):673. doi: <https://doi.org/10.1186/s12879-016-1995-z>
11. Cecílio HPM, Teston EF, Marcon SS. Access to the diagnosis of tuberculosis from the point of view of health professionals. *Texto & Contexto Enferm*. 2017;26(3):e0230014. doi: <https://doi.org/10.1590/0104-07072017000230014>

12. Gonzales, Roxana Isabel Cardozo. Atenção primária à saúde na detecção de casos de tuberculose em municípios prioritários do sul do Brasil: desafios e investimentos em estratégias de informação. Chamada MCTI/CNPq/MS-SCTIE - Decit N 40/2012. 2012. Resumo em: <https://institucional.ufpel.edu.br/projetos/id/p6794>
13. Secretaria Estadual de Saúde (RS), Centro Estadual de Vigilância em Saúde, Divisão de Vigilância Epidemiológica. Programa Estadual de Controle da Tuberculose (PECT/RS). Informe epidemiológico: tuberculose. Porto Alegre (RS): Secretaria Estadual de Saúde; 2018.
14. BRASIL. Ministério da Saúde. Resolução nº 466, de 12 de dezembro de 2012. Divulga as diretrizes e normas regulamentadoras das pesquisas e testes em seres humanos. Diário Oficial da União: Seção 1, Brasília, DF, n. 112, p. 59, 13 jun. 2013.
15. Sá LD, Scatena LM, Rodrigues RAP, Nogueira JA, Silva AO, Villa TCS. Gateway to the diagnosis of tuberculosis among elders in Brazilian municipalities. *Rev Bras Enferm.* 2015;68(3):408-14. doi: <http://dx.doi.org/10.1590/0034-7167.2015680313i>
16. Bartholomay P, Pelissari DM, Araujo WN, Yadon ZE, Heldal E. Quality of tuberculosis care at different levels of health care in Brazil in 2013. *Rev Panam Salud Publica.* 2016;39(1):3-11.
17. Grut L, Sanudi L, Braathen SH, Jürgens T, Eide AH. Access to tuberculosis services for individuals with disability in rural Malawi, a qualitative study. *PLoS One.* 2015;10(4):e0122748. doi: <https://doi.org/10.1371/journal.pone.0122748>
18. Pinheiro PGOD, Sá LD, Palha PF, Oliveira RCO, Nogueira JA, Villa TCS. Critical points for the control of Tuberculosis on Primary Health Care. *Rev Bras Enferm.* 2017;70(6):1227-34. doi: <https://doi.org/10.1590/0034-7167-2016-0467>
19. Stošić M, Lazarević N, Kuruc V, Ristić L. Assessment of the role of primary health care in tuberculosis control in Serbia. *Med Pregl.* 2015;9(10):331-5. doi: <https://doi.org/10.2298/MPNS1510331S>
20. Ponce MAZ, Wysocki AD, Arakawa T, Andrade RLP, Vendramini SHF, Silva Sobrinho RA, et al. Atraso do diagnóstico da tuberculose em adultos em um município paulista em 2009: estudo transversal. *Epidemiol Serv Saúde* [Internet]. 2016 [acesso em 2020 jan 03]; 25(3):553-62. Disponível em: <https://www.scielo.br/pdf/ress/v25n3/2237-9622-ress-25-03-00553.pdf>

### Corresponding author

Jéssica Oliveira Tomberg

E-mail: [jessicatomberg@hotmail.com](mailto:jessicatomberg@hotmail.com)

Address: Gomes Carneiro Street, 647

ZIP Code: 96010-610, Pelotas, RS, Brazil



## **Authorship contributions**

### **1 – Jéssica Oliveira Tomberg**

Substantial contribution to the study design, data collection, statistical analysis, conceptualization; elaboration and critical review of intellectual content; methodology; preparation of the original, writing and editing; supervision; approval of the final version of the study to be published.

### **2 – Lílian Moura de Lima Spagnolo**

Substantial contribution to the study design, data collection, statistical analysis, conceptualization, elaboration and critical review of intellectual content; methodology; writing and editing, approval of the final version of the study to be published.

### **3 – Jenifer Harter**

Data collection, statistical analysis, conceptualization, elaboration and critical review of intellectual content, approval of the final version of the study to be published.

### **4 – Martina Dias da Rosa Martins**

Substantial contribution to the study design, statistical analysis, writing and editing, approval of the final version of the study to be published.

### **5 – Roxana Isabel Cardozo Gonzales**

Substantial contribution to the study design; financing acquisition; financing management; project management; data collect; elaboration and critical review of intellectual content; methodology; supervision; approval of the final version of the study to be published.

## **The way in which you should cite this paper**

Tomberg JO, Spagnolo LML, Härter J, Martins MDR, Gonzales RIC. Comportamento de busca por serviços de saúde para a detecção da tuberculose. Rev. Enferm. UFSM. 2020 [Acesso em: Anos Mês Dia]; vol.10 e52: 1-17. DOI:<https://doi.org/10.5902/2179769241815>