

Airway: Data From the Program for Improvement of Access and Quality in Primary Care

Via Aérea: Dados do Programa de Melhoria do Acesso e da Qualidade da Atenção Básica

Vía Aérea: Datos del Programa de Mejora del Acceso y la Calidad de Atención Básica

RESUMO

Buscou-se identificar a presença de insumos para garantir a via aérea em adultos na atenção básica a partir de dados secundários do Programa Nacional de Melhoria do Acesso e Qualidade da Atenção Básica, de 2018, em um estudo transversal. Os dados foram analisados segundo regiões geográficas e porte populacional dos municípios, utilizando frequências absolutas, percentuais e razão de prevalência. A maioria das equipes afirma possuir insumos em mais de 70%, porém há menor predominância no Norte e Nordeste, além de municípios de médio porte; principalmente para o laringoscópio, no Norte (24,06%) comparado ao Sul (61,05%) (RP:0,394) e em municípios de médio porte (36,76%) comparados aos de pequeno (RP:1,195) e grande (RP:0,702). A falta de insumos compromete o desempenho assistencial, podendo agravar condições de saúde. Aprimorar políticas públicas e gestão financeira é essencial. A distribuição equitativa de insumos é crucial para garantir um atendimento eficaz e reduzir desigualdades, fortalecendo o SUS.

DESCRIPTORIOS: Políticas de saúde; Pesquisa sobre Serviços de Saúde; Atenção Primária à Saúde; Manuseio das Vias Aéreas; Equipamentos e Provisões.

ABSTRACT

We sought to identify the presence of supplies to ensure the airway in adults in primary care based on secondary data from the National Program for Improving Access and Quality of Primary Care, 2018, in a cross-sectional study. The data were analyzed according to geographic regions and population size of the municipalities, using absolute frequencies, percentages and prevalence ratio. Most teams claim to have supplies in more than 70%, but there is a lower predominance in the North and Northeast, in addition to medium-sized municipalities; mainly for the laryngoscope, in the North (24.06%) compared to the South (61.05%) (PR: 0.394) and in medium-sized municipalities (36.76%) compared to small (PR: 1.195) and large (PR: 0.702). The lack of supplies compromises care performance and can worsen health conditions. Improving public policies and financial management is essential. The equitable distribution of supplies is crucial to ensure effective care and reduce inequalities, strengthening the SUS.

DESCRIPTORS: Health policies; Health Services Research; Primary Health Care; Airway Management; Equipment and Supplies.

RESUMEN

Se buscó identificar la presencia de insumos para garantizar la vía aérea en adultos en la atención primaria a partir de datos secundarios del Programa Nacional de Mejora del Acceso y la Calidad de la Atención Primaria, de 2018, en un estudio transversal. Los datos fueron analizados según las regiones geográficas y el tamaño poblacional de los municipios, utilizando frecuencias absolutas, porcentajes y razón de prevalencia. La mayoría de los equipos afirma contar con insumos en más del 70%, pero hay una menor prevalencia en el Norte y Nordeste, así como en los municipios de tamaño medio; principalmente para el laringoscopio, en el Norte (24,06%) en comparación con el Sur (61,05%) (RP:0,394) y en municipios de tamaño medio (36,76%) en comparación con los de pequeño (RP:1,195) y gran tamaño (RP:0,702). La falta de insumos compromete el rendimiento asistencial, pudiendo agravar las condiciones de salud. Mejorar las políticas públicas y la gestión financiera es esencial. La distribución equitativa de insumos es crucial para garantizar una atención eficaz y reducir desigualdades, fortaleciendo el SUS.

DESCRIPTORIOS: Políticas de salud; Investigación sobre Servicios de Salud; Atención Primaria a la Salud; Manejo de las Vías Aéreas; Equipos y Provisiones.

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INTRODUCTION AND OBJECTIVE

Historically, along with the rural exodus, population growth and the organization of health services have put pressure on them, especially in emergency care, given the overcrowding of emergency care units. And urgencies and emergencies (UE) are health problems that require immediate medical assistance.¹⁻²⁻³

From 1999 onwards, standards were introduced to organize care for the UE, culminating in the creation of the National Emergency Care Policy and the establishment of the Emergency Care Network (RAU) in the Unified Health System (SUS) in 2011.⁴⁻⁵⁻⁶

The policies created aim to organize care for the UE. Primary Health Care (PHC) is responsible for establishing, monitoring and maintaining the infrastructure necessary to care for the UE that arrive at the basic health units (UBS); a principle corroborated by the National Primary Care Policy (PNAB - Política Nacional de Atenção Básica).⁶⁻⁷

The PHC in Brazil is the main gateway to the SUS, organized to serve various health conditions, including UE. According to the PNAB, PHC teams must provide reception with risk classification, guarantee resolute assistance and the first care for UE. Thus, a UBS must be able to receive, meet and regulate these demands, contributing to access to the SUS, comprehensive care and care coordination.⁶⁻⁷⁻⁸⁻⁹ However, limitations are described in the literature related to structure, incomplete team training, lack of equipment, supplies, medications and exams.⁹

Thus, to identify the difficulties related to ensuring airway access for adults in PHC, one of the steps in providing care

to the UE, the presence of equipment and supplies was analyzed, based on secondary data from the National Program for Improving Access and Quality of Primary Care (PMAQ - Programa Nacional de Melhoria do Acesso e da Qualidade da Atenção Básica), according to the country's geographic region and population size of the municipalities.

METHOD

Cross-sectional, retrospective, quantitative study based on the analysis of secondary data collected in the 3rd external evaluation cycle of PMAQ, 2018. The data were collected by trained people, with field supervision for quality control of the data, which are in the public domain.¹⁰⁻¹¹⁻¹²⁻¹³

The PMAQ external evaluation questionnaire was organized into modules. The responses to the items in Module I on UBS infrastructure were used for this study, specifically the variables related to inputs for UE care, with regard to ensuring airway access in adults.

The following variables were selected: presence of supplies for emergency care and four items: 1m3 oxygen cylinder/torpedo with valve, flowmeter, 250ml humidifier and 2m of silicone intermediate tube, adult laryngoscope with endotracheal tube, pulse oximeter and adult self-inflating bag-mask system with trans-

parent mask (AMBU). During the external evaluation, the presence or absence of the supplies in the unit was verified.¹¹

The data were compiled from the database into an Excel[®], spreadsheet, aggregated by geographic region of the country (North, South, Southeast, Central-West and Northeast) and by population size of the municipalities in small, medium and large: less than 25 thousand inhabitants, from 25 to 100 and greater than 100, respectively.¹³ Afterwards, they were subjected to descriptive analysis, using absolute and percentage frequencies, and statistical analysis, with an estimate of the prevalence ratio using a log-binomial regression model.¹⁴

The work was approved by the Research Ethics Committee (CAAE No.: 28137419.9.0000.5414), waiving the need for consent forms.

RESULTS

The data show that 30,346 health units were visited during the AE, and of these, 28,939 units (95.36%) accepted the application of the questionnaire, with a loss of 1,407 (4.64%).

The Northeast (41.6%) and Southeast (28.8%) regions were responsible for more than 70% of the participating health units, followed by the South (14.4%), North and Central West (7%).

Table 1: Presence of the supplies necessary for the care of the UE selected for the study, by region, according to data from the 3rd cycle of the PMAQ.

Variable	Region					BRAZIL
	Midwest (n=2145)	North (n=2255)	Northeast (n=12048)	South (n=4160)	Southeast (n=8331)	n=28939
Does the unit have supplies for emergency care?						
Yes	1681 (78,37%)	1330 (58,98%)	10436 (86,62%)	3679 (88,44%)	6443 (77,34%)	23569 (81,44%)



	Midwest (n=1681)	North (n=1330)	Northeast (n=10436)	South (n=3679)	Southeast (n=6443)	n=23569
1 m3 oxygen cylinder/torpedo with valve, flowmeter, 250 ml humidifier and 2 m of silicone intermediate tube						
Yes	1191 (70,85%)	530 (39,85%)	5226 (50,08%)	3171 (86,19%)	4465 (69,3%)	14583 (61,87%)
Adult laryngoscope with endotracheal tube						
Yes	755 (44,91%)	320 (24,06%)	3371 (32,3%)	2246 (61,05%)	3622 (56,22%)	10314 (43,76%)
Pulse oximeter						
Yes	937 (55,74%)	325 (24,44%)	4739 (45,41%)	2849 (77,44%)	4234 (65,71%)	13084 (55,51%)
Adult self-inflating bag-mask system with clear mask (AMBU)						
Yes	1180 (70,2%)	619 (46,54%)	5485 (52,56%)	3332 (90,57%)	5531 (85,85%)	16147 (68,51%)

Source: prepared by the author

Regarding supplies for UE care, in almost all regions, more than 70% of the units reported having such supplies in the UBS, except in the North region. The prevalence ratio of having supplies for UE care in the Northeast region was 1.2 times higher than in the Southeast (PR: 1.120; 95% CI: 1.105-1.135; $p < 0.001$) and in the Central West it was 1.3 times higher than in the North region (PR: 1.329; 95% CI: 1.275-1.384; $p < 0.001$).

Regarding the supplies analyzed in this study, there was disparity in the responses between the regions, with a predominance of the presence of equipment related to the airway in the South region. The Southeast and Central West regions had higher percentages regarding the existence of equipment when compared to the Northeast and North regions.

The pulse oximeter, a low-cost, highly useful and easy-to-use piece of equipment, reached a maximum of 77% in the South region and a minimum of 24% in the North region. Both the presence of an oximeter and a laryngoscope in the North region showed the worst results, close to 24%. The chance of having an oximeter in the South region was 6.8 when compared to the North region (PR: 0.316; 95% CI: 0.287-0.347; $p < 0.0001$).

The laryngoscope was the least mentioned in all regions, only 43.76% of the units, in general, reported having this

item and three of the five regions have the item in proportions lower than 50%. The chance of having this equipment in the South region was 6.06, when compared to the North region (PR: 0.394; 95% CI: 0.357-0.435; $p < 0.0001$).

Regarding size, the presence of supplies was higher in small and medium-sized municipalities (Table 2), with a prevalence ratio of 1.042 when comparing small with large municipalities (95% CI: 1.027-1.057; $p < 0.0001$). There was also

a greater presence of oxygen torpedoes in smaller municipalities than in medium (PR: 1.230; 95% CI: 1.200-1.261; $p < 0.0001$) and large (PR: 1.040; 95% CI: 1.015-1.064; $p < 0.0001$) municipalities. Likewise, regarding the presence of oximeters in small municipalities in relation to medium-sized ones (PR: 1.245; 95% CI: 1.212-1.280; $p < 0.0001$) and large-sized ones (PR: 1.164; 95% CI: 1.131-1.198; $p < 0.0001$).

Table 2: Presence of inputs required to serve the UE selected for the study, by size, according to data from the 3rd PMAQ cycle.

Variable	Population size			BRAZIL
	Small (n=11984)	Medium (n=9424)	Big (n=7531)	n=28939
Does the unit have supplies for emergency care?				
Yes	9950 (83,03%)	7617 (80,83%)	6002 (79,7%)	23569 (81,44%)
	Small (n=9950)	Medium (n=7617)	Big (n=6002)	n=23569
1 m3 oxygen cylinder/torpedo with valve, flowmeter, 250 ml humidifier and 2 m of silicone intermediate tube				
Yes	6621 (66,54%)	4120 (54,09%)	3842 (64,01%)	14583 (61,87%)
Adult laryngoscope with endotracheal tube				
Yes	4370 (43,92%)	2800 (36,76%)	3144 (52,38%)	10314 (43,76%)
Pulse oximeter				
Yes	6134 (61,65%)	3771 (49,51%)	3179 (52,97%)	13084 (55,51%)
Adult self-inflating bag-mask system with clear mask (AMBU)				
Yes	6686 (67,2%)	4798 (62,99%)	4663 (77,69%)	16147 (68,51%)

Source: prepared by the author

The presence of AMBU^R and Laryngoscope was more frequent in large and small municipalities, with AMBU^R being more common in the units than the laryngoscope.

Small municipalities were more likely to find AMBU^R (PR: 1.067; 95% CI: 1.044-1.091; $p < 0.0001$) and laryngoscope (PR: 1.195; 95% CI: 1.152-1.240; $p < 0.0001$) than medium-sized municipalities. Laryngoscope was also the least cited in medium-sized municipalities (36.76%), with a lower prevalence ratio when compared to small (PR: 1.195; 95% CI: 1.152-1.240; $p < 0.0001$) and large municipalities (PR: 0.702; 95% CI: 0.676-0.729; $p < 0.0001$).

DISCUSSION AND CONCLUSION

This study highlights the disparities in health in Brazil. There is a lack of equipment in the North and Northeast regions when compared to other regions. Medium-sized municipalities had the greatest deficit of supplies in three of the four items evaluated. The laryngoscope was the item with the lowest frequency in the analyses by region and size.

The PHC must respond to the chronic, chronic-acute or acute demands of the registered population, including emergency care during spontaneous demands; be they surgical, clinical, related to mental health, women's and pregnant women's health, children's health and/or those related to external causes.¹⁵ To achieve this, the units must be able to receive and meet such demands.

The initial emergency care in the PHC and the transfer of cases to other points in the Health Care Network (RAS), when necessary, requires adequate infrastructure and supplies, as well as qualified professionals. One of the challenges in this process is improving the infrastructure.^{7-8,16}

Reviewing the official publications of the Ministry of Health, a lack of

recommendations is identified. The Infrastructure Manual of the Department of Primary Care/MoH recommends the presence of an oxygen cylinder, Ordinance No. 2048 dated 2002 and the PNAB generically point out the need for an environment and provision of equipment/materials/supplies suitable for the first care/stabilization of emergencies. In addition, the basic care notebook, which deals with the reception of spontaneous demand, recommends the presence of oxygen and AMBUR. However, PMAQ, in its nationwide research, investigates more than 30 items in structure and inputs; becoming a detailed instrument for quality assessment.^{7,12,17-18-19}

The importance of materials such as laryngoscope, oxygen, AMBUR and oximeter lies in the ability to provide adequate emergency assistance. The absence of the items evaluated implies delays in the treatment of acute respiratory problems and protection of the airway when the level of consciousness is reduced or cardio-respiratory arrest occurs, which can lead to serious complications.²⁰

Of the items analyzed, AMBUR was the most present in the units, while the laryngoscope was the least found. Even so, in the North and Northeast regions, approximately half of the units still lack this item, which is essential for oxygenation and ventilation.

In short, the presence of materials is essential to ensure effective and timely emergency care in PHC, while their absence can lead to delays in care, make diagnoses difficult and generate clinical complications for patients and insecurity for professionals during care, putting health and life at risk.²¹

Studies associate structural factors with performance and point out weaknesses in the care of acute conditions in PHC related to the availability of equipment, which corroborates

the importance of well-equipped units. It is necessary to invest in the acquisition of supplies and maintenance of quality assessment processes.^{9,22-23-24}

This article has as a limitation the lack of differentiation between UBS and the Family Health Strategy, which may influence the organization of care. No inputs were evaluated for the pediatric population, only for adults. It was limited to the use of a program that has already been discontinued, however, there is no other strategy currently implemented that evaluates PHC in Brazil within the scope of the PMAQ.

The analysis of the presence of inputs reinforces the need for investments in infrastructure to guarantee the role of PHC in coordinating care within the health care network, especially in the RAU, and may contribute to the planning of actions by managers.

Regional inequalities in access to essential items exacerbate health disparities, compromising care in underserved areas and overloading regions with more resources. The results highlight the urgency of promoting equitable distribution of materials and strengthening all regions of the country, ensuring fair, timely and universal care, in accordance with the precepts of the SUS.

The research points to the need to improve public policies, management, regional allocation of resources, health assessment processes and health care practices in PHC, including medical emergencies.

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