

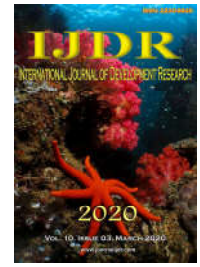


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REVIEW ARTICLE

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## CLINICAL PROBLEMS ASSISTED BY THE MOBILE URGENCY CARE SERVICE

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### ABSTRACT

**Objective:** To describe the clinical problems assisted by the Mobile Emergency Care Service. **Methods:** Study conducted at the Urgency and Emergency Medical Regulation Center of São Luís, Maranhão, Brazil, in October and November 2018. A total of 340 occurrences were identified and generated a sample of 297 consultations. **Results:** There were general (220), psychiatric (33), pediatric (32) and obstetric (12) problems. In the general category, neurological causes (45) in the elderly (124) were prevalent; in the psychiatric category, aggressiveness and agitation (11) prevailed; in the pediatric, digestive causes (11) prevailed; and in the obstetric, uterine contractions (3) and clients aged 11 to 20 years (5) prevailed. More than half of the cases of assistance, 236 (79.5%), occurred at homes and the prevailing type of ambulance was the basic life support ambulance, 248 (83.5%). In the outcome of the victims, the prevailing destination was the hospital 244 (82.2%). In psychiatric cases, there was incomplete filling of forms. **Conclusion:** The findings contribute to reflection about care in critical health situations.

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### INTRODUCTION

The urgency and emergency services are important markers of the quality of health of the population, where unusual or recurring diseases are identified. The Mobile Emergency Care Service (SAMU) is the main mobile component of the urgency and emergency care network, providing prehospital care with the goal of reducing the number of deaths, the sequelae caused by the delay in care, and the length of hospitalization (Almeida, 2016). The Mobile Emergency Care Service seeks to enhance and organize the access to urgency services and hospital beds, becoming a gateway to the system and offering the possibility of saving lives (O'Dwyer, 2017). This service plays a crucial role in enabling early care for victims in serious states and in organizing the flow of care (Teles, 2017). Several factors have contributed to the increased demand for mobile services, such as the increase in accidents and urban violence, the difficulty of consolidating state urgency and emergency systems, the large territory of the country, the complexity of referral/counter-referral centers, the expansion of public and private services, among others (Silva, 2010). Therefore, there is a need for appropriate and urgent intervention strategies for victims of health problems in critical situations out of the

hospital environment, requiring immediate and quality care. From this perspective, the objective of the study was to investigate the clinical problems treated by SAMU-192.

### MATERIALS AND METHODS

Quantitative cross-sectional study conducted at the SAMU-192 Urgency and Emergency Medical Regulation Center of São Luís-Maranhão, Brazil. All clinical care records between January and February 2017 were included; 340 were records of occurrences or telephone calls. Of these, 43 occurrences (calls) did not result in care. There was therefore a total sample of 297 cases assisted. Data collection took place from October to November 2018, from Monday to Friday, during the administrative hours of the service. Data were collected by the researcher from the database of the SAMU-192 Urgency and Emergency Medical Regulation Center of São Luís through the Individual Medical Regulation Form, completed by the health team, where the situation of the victim is described. The study was approved by the Research Ethics Committee of the Federal University of Maranhão (UFMA), and received favorable Opinion under number 2.935.029 on 10/03/2018.

## RESULTS

Of the 297 cases assisted, 220 (74.8%) were caused by general problems, 33 (11.1%) by psychiatric problems, 32 (10.8%) by pediatric problems, and 12 (4.0%) by obstetric problems. Regarding the general category, the neurological causes 45 (20.5%) and cardiac causes 43 (19.5%) were prevalent; in the psychiatric category, aggression and agitation 11 (33.3%) prevailed; in pediatric problems, digestive 11 (34.4%) and neurological and respiratory 4 (12.5%) causes prevailed; and in obstetric problems, uterine contractions 3 (25%) prevailed (Table 1). Convulsive seizures and stroke prevailed among the neurological causes in the general category, while cardiopulmonary arrest and systemic arterial hypertension prevailed in cardiac causes. In turn, vomiting and diarrhea were prevalent among the digestive causes in the case of pediatric problems.

**Table 1. Causes of clinical problems in the cases assisted by SAMU-192**

| Clinical diseases    | Causes       | N                            | %    |      |
|----------------------|--------------|------------------------------|------|------|
| General              | Neurological | 45                           | 20.5 |      |
|                      | Cardiac      | 43                           | 19.5 |      |
|                      | Digestive    | 37                           | 16.8 |      |
|                      | Respiratory  | 21                           | 9.5  |      |
|                      | Metabolic    | 16                           | 7.3  |      |
|                      | Neoplastic   | 12                           | 5.5  |      |
|                      | Infectious   | 4                            | 1.8  |      |
|                      | Others       | 42                           | 19.1 |      |
|                      | Subtotal     | 220                          | 74.1 |      |
|                      | Psychiatric  | Aggressiveness and agitation | 11   | 33.3 |
|                      |              | Agitation                    | 9    | 27.3 |
|                      |              | Aggressiveness               | 4    | 12.1 |
|                      |              | Hallucination                | 4    | 12.1 |
| Suicidal ideation    |              | 3                            | 9.1  |      |
| Psychotic break      |              | 2                            | 6.1  |      |
| Subtotal             |              | 33                           | 11.1 |      |
| Pediatric            |              | Digestive                    | 11   | 34.4 |
|                      | Neurological | 4                            | 12.5 |      |
|                      | Respiratory  | 4                            | 12.5 |      |
|                      | Infectious   | 3                            | 9.4  |      |
|                      | Cardiac      | 1                            | 3.1  |      |
|                      | Others       | 9                            | 28.1 |      |
|                      | Subtotal     | 32                           | 10.8 |      |
|                      | Obstetric    | Uterine contractions         | 3    | 25   |
| Pelvic pain          |              | 2                            | 16.7 |      |
| Fluid loss           |              | 2                            | 16.7 |      |
| Seizure crisis       |              | 2                            | 16.7 |      |
| Spontaneous abortion |              | 1                            | 8.3  |      |
| Home birth           |              | 1                            | 8.3  |      |
| Hypertensive peak    |              | 1                            | 8.3  |      |
| Subtotal             |              | 12                           | 4.0  |      |
| Total                |              | 297                          | 100  |      |

Source: SAMU, São Luís - MA, 2017.

There was a predominance of women 156 (52.5%) and elderly 125 (42.1%). There were only 6 (2%) cases where no information about the age range was available in the regulation form. The most frequent comorbidities of the victims were systemic arterial hypertension 68 (17.5%) and diabetes 43 (11%), followed by heart disease and stroke, both with 22 (5.7%) (Table 2). Regarding the neoplasia, a comorbidity present in 12 (2.9%) victims, pain was the most frequent complaint, identified in 7 cases (58.3%), followed by bleeding in 2 cases (16.7%). Pleural effusion, pneumonia, pulmonary emphysema, asthma and acute pulmonary edema were recurrent among the respiratory problems; elitism, depression and schizophrenia among the mental problems; and arthritis, arthrosis, herniated disc, and osteoporosis among bone problems.

All psychiatric cases were assisted by the Fire Department of Maranhão State to ensure staff safety and success. It was observed that information on vital signs was practically non-existent in the regulation forms of the psychiatric cases assisted.

**Table 2. Distribution of clinical problems in the cases assisted by SAMU-192 according to gender, age and comorbidity**

| Clinical problems              | N   | %    |
|--------------------------------|-----|------|
| Sex                            |     |      |
| Female                         | 156 | 52.5 |
| Male                           | 141 | 47.5 |
| Total                          | 297 | 100  |
| Age group                      |     |      |
| 0 to 10 years                  | 21  | 7.1  |
| 11 to 20 years                 | 28  | 9.4  |
| 21 to 30 years                 | 30  | 10.1 |
| 31 to 40 years                 | 31  | 10.4 |
| 41 to 50 years                 | 34  | 11.5 |
| 51 to 59 years                 | 22  | 7.4  |
| ≥ 60 years                     | 125 | 42.1 |
| Subtotal                       | 291 | 98   |
| No information                 | 6   | 2    |
| Total                          | 297 | 100  |
| Comorbidity*                   |     |      |
| Systemic arterial hypertension | 68  | 17.5 |
| Diabetes                       | 43  | 11   |
| Heart disease                  | 22  | 5.7  |
| Stroke                         | 22  | 5.7  |
| Neoplasia                      | 12  | 3.1  |
| Respiratory problem            | 9   | 2.3  |
| Mental problem                 | 9   | 2.3  |
| Kidney problem                 | 5   | 1.3  |
| Bone problem                   | 4   | 1    |
| Subtotal                       | 194 | 49.9 |
| No information                 | 195 | 50.1 |
| Total                          | 389 | 100  |

\* Some individuals presented more than one comorbidity.

Source: SAMU, São Luís - MA, 2017.

Box 1 shows that the female gender was prevalent in general problems 114 (38.4%) and pediatric problems 17 (5.7%), while the male sex 20 (6.7%) prevailed in psychiatric diseases.

**Box 1 - Distribution of clinical problems in the cases assisted by SAMU-192**

| SEX      | General |      | Psychiatric |      | Pediatric |      | Obstetric |   |
|----------|---------|------|-------------|------|-----------|------|-----------|---|
|          | N       | %    | N           | %    | N         | %    | N         | % |
| Female   | 114     | 38.4 | 13          | 4.4  | 17        | 5.7  | 12        | 4 |
| Male     | 106     | 35.7 | 20          | 6.7  | 15        | 5.1  | -         | - |
| Subtotal | 220     | 74.1 | 33          | 11.1 | 32        | 10.8 | 12        | 4 |

Source: SAMU, São Luís - MA, 2017.

As there was a predominance of older women (Table 2), this variable cannot be expected to change. However, it is recognized that advanced age may interfere with the assessment of overall risk, taking into account the sum of the factors of risk, the synergism between these factors and consequently the complexity of the cases assisted, where the effects on the incidence and the evolutionary prognosis were related. Elderly clients 124 (41.8%) and the age group from 41 to 50 years 33 (11.1%) prevailed in general problems. Patients in the age range from 21 to 30 years were frequent 15 (5%) in cases of psychiatric problems, and the maximum age was ten years 21 (7.1%) among pediatric patients. Regarding obstetric problems, the young age of patients, who were mostly in the range from 11 to 20 years 5 (1.7%), including two adolescents, was noteworthy. Some forms did not have information about age 6 (2%). More than half of the visits occurred at the home of the patients 236 (79.5%). There were 24 (8.1%) cases in the

hospital, mostly justified by the need to transfer patients in the ambulance to other units because of the severity of the patient's health status or to make examinations. The cases assisted on public roads totaled 18 (6%). Other cases happened in the following places: clinic, bus station, hotel, beach, pharmacy, supermarket, store, soccer field, health center, airport, railway terminal, and company. All cases that had been classified as red were assisted with advanced life support. Box 2 shows that basic life support intervened in 248 (83.5%) cases, and advanced life support in 49 (16.5%). It was found that ambulances with the advanced life support were more frequently used in cases of local death and cardiopulmonary arrest, as well as the rapid intervention vehicles such as motorcycle ambulances.

### Box 2. Causes of clinical problems and type of ambulance of SAMU-192

| Types of ambulance | Cause of the clinical problem | N       | %    |
|--------------------|-------------------------------|---------|------|
| Basic life support | Digestive                     | 36      | 12.1 |
|                    | Psychiatric                   | 33      | 11.1 |
|                    | Neurological                  | 30      | 10.1 |
|                    | Pediatric                     | 28      | 9.5  |
|                    | Cardiac                       | 23      | 7.7  |
|                    | Respiratory                   | 21      | 7.1  |
|                    | Metabolic                     | 13      | 4.4  |
|                    | Neoplastic                    | 12      | 4    |
|                    | Obstetric                     | 9       | 3    |
|                    | Infectious                    | 5       | 1.7  |
|                    | Intoxication                  | 1       | 0.3  |
|                    | Others                        | 37      | 12.5 |
|                    | Subtotal                      | 248     | 83.5 |
|                    | Advanced life support         | Cardiac | 22   |
| Neurological       |                               | 13      | 4.4  |
| Pediatric          |                               | 5       | 1.7  |
| Obstetric          |                               | 3       | 1    |
| Respiratory        |                               | 2       | 0.7  |
| Digestive          |                               | 1       | 0.3  |
| Metabolic          |                               | 1       | 0.3  |
| Intoxication       |                               | 1       | 0.3  |
| Others             |                               | 1       | 0.3  |
| Subtotal           |                               | 49      | 16.5 |
| Total              |                               | 297     | 100  |

Source: SAMU, São Luis - MA, 2017.

Two hundred and forty-four (82.2%) victims had the hospital as outcome, that is, the main gateway to the cases treated, while the home was the outcome of 17 (5.7%) cases. Other outcomes relate to on-site death or death during transportation.

## DISCUSSION

The SAMU-192 classifies individuals into three colors, red, yellow and green, that indicate the risk. Red indicates imminent risk of death and need for immediate care, where the patient must be transported/assisted by advanced support. Yellow indicates need for immediate care where the patient can be transported/assisted by a basic life support ambulance. Green indicated situations without imminent risk of death or injury (Silva, 2016). Problems due to external causes, urban violence, and cardiovascular, respiratory and metabolic diseases are the main serious situations that determine the need for emergency and definitive care (Brasil, 2014 and Santos, 2014). By calling number 192, the citizen requests the service of a regulatory center that has health professionals that decide the type of care, the ambulance and the appropriate staff, and who are trained to give first aid guidance to victims, often necessary to save lives (Tibães, 2018). It is recognized that advanced age may interfere with the assessment of the

overall risk of the victim, considering the sum of the risk factors, the synergism between these factors and consequently the complexity of the cases assisted, where the effects on the incidence are related to the evolutionary prognosis. By 2025, Brazil will be the sixth country in the world with the largest number of elderly people and this phenomenon is due to the reduction in fertility and mortality rates (OMS, 2005). In the state of Maranhão, the urban population over 55 years old is 227,385 for males and 275,138 for females and the projected life expectancy of women in Maranhão for 2020 is 75.6 years, a growth of 2.8 years compared to 2010 (Ervatti, 2018). The naturalness of life is known to predispose to the development of diseases, especially cardiovascular and renal diseases, being the first commonly associated with increased incidence and mortality due to stroke (Dutra, 2016). SAMU assists cases of emergency and psychiatric urgency when a thinking, emotional or behavioral disorder of the individual offers risk to the patient and to others, such as aggression, suicide and homicide. The prevalence of males in the psychiatric crisis assisted by SAMU may be explained by the lower adherence of men to treatment of diseases when compared to women, favoring the onset of more aggressive crises among men (Santos, 2014). In SAMU, one of the ways in which comorbidities are mapped is by assessing risk factors and checking vital signs (axillary temperature, respiratory rate, blood pressure), as well as capillary glucose, heart rate and oxygen saturation. Poor notes of vital signs in the psychiatric care regulation forms seem to indicate, at first, that aggression and agitation may make such verification unfeasible and consequently also the filling of the data.

In relation to pediatric diseases, there was a significant participation of external causes, accidents and violence, especially foreign body aspiration, traffic accidents, drowning, and homicides, becoming a major public health problem for families and society (França, 2015). Attention should be paid to cases of vomiting and diarrhea in pediatric cases, which may indicate signs of dehydration. In Brazil, the main causes of dehydration are infectious and parasitic diseases, which in 2009 alone were the 4<sup>th</sup> cause of death and 2<sup>nd</sup> of hospitalization in the 0-4 age group (BRASIL, 2011). Regarding obstetric diseases, research indicates that the frequency of urgency and emergency care in pregnant adolescents has increased, causing concern especially with respect to the lower income population compared to middle class (Chacham, 2012). Increasing education, growth of the labor market for women, conducting campaigns on condom use, and increasing access to contraceptive methods are known to cause a reduction in pregnancy rates in Brazilian adolescence. However, this decrease does not occur uniformly, but rather presents inequalities that reflect the social development of the territory, being smaller in the most marginal social classes (Cad. Saúde Pública, 2012). The population generally assesses health status according to its social beliefs and, in the case of pregnant women, when at home, they experience the strong desire for immediate transport to the hospital at the very moment they present signs of labor, which explains their calls for the mobile emergency service (Michilin, 2016).

## CONCLUSION

A total of 297 cases assisted by the SAMU were identified, of which 220 (74.1%) were due to general problems, 33 (11.1%) due to psychiatric problems, 32 (10.8%) due to pediatric

problems, and 12 (4.0%) due to obstetric problems. Among the general problems, neurological 45 (20.5%) and cardiac 43 (19.5%) causes were prevalent; among psychiatric problems, aggressiveness and agitation 11 (33.3%) prevailed; among pediatric problems, digestive causes 11 (34.4%) and neurological and respiratory causes, both 4 (12.5%), prevailed; and in the case of obstetric problems, uterine contractions 3 (25%) prevailed. As for sociodemographic characteristics and comorbidities, there was predominance of the female sex 156 (52.5%) and elderly patients 125 (42.1%) with hypertension 68 (17.5%) and diabetes 43 (11%). In the case of general problems, there was a prevalence of elderly patients 124 (41.8%). In psychiatric problems, the age range of 21 to 30 years was frequent 15 (5%), while in pediatric problems the maximum age was 10 years 21 (7.1%). Regarding obstetric cases, the young age range from 11 to 20 years 5 (1.7%) was noteworthy, including two adolescents. A lack of information in the forms of psychiatric cases was observed, especially the verification of vital signs. More than half 236 (79.5%) of the cases were assisted at the home environment. There were 24 (8.1%) cases assisted in the hospital, most of them due to the need to change the patient to other units, i.e., transfer them to other units or perform examinations. Basic life support provided intervention in 248 (83.5%) cases and advanced life support in 49 (16.5%) cases. The findings of the study contribute to the care offered in the service networks, specifically the urgency and emergency mobile network, with respect to the comprehensiveness of care in an organized, qualified, resolute and reference way, representing an opportunity for reflection about specific proposals and actions, necessary in critical health situations.

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