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ORIGINAL ARTICLE/*ARTIGO ORIGINAL*

Evaluation study of the improvement of the quality of death information in hospitals of the states of Rio de Janeiro and São Paulo, Brazil, 2017

Estudo avaliativo da melhoria da qualidade da informação de morte em hospitais dos estados do Rio de Janeiro e de São Paulo, 2017

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ABSTRACT: ***Introduction***: Deaths classified as Garbage Cause (GC) are considered to be of little use in triggering public health prevention actions. ***Objective*:** Evaluate the impact of hospital research on recovering the true root cause of death. ***Methodology*:** Descriptive study on the investigation of deaths with root causes classified as garbage code in ten selected hospitals with the highest number of this cause of death in the states of Rio de Janeiro (RJ) and São Paulo (SP), Brazil, in 2017. The investigation considered the patient's medical record, which contains the information collected by hospital surveillance professionals in a standardized form. ***Results*:** 2,579 deaths with a GC and 2,116 with GC priorities. The highest proportion occurred in the 70-year-old or older group with differences in the predominant causes as a function of the life cycle. The GC reclassification was 41.9% and 93.6% of deaths investigated in RJ and SP, respectively. Deaths which had altered causes and remained as garbage code were analyzed for change in severity level, which take into account the potential impact of GC in the mortality profile. Thus, 70.7% and 73.6% of GC deaths with very high and with high level, respectively, were reclassified to lower levels. Among the garbage codes that went to well-defined causes, the ICD-10 External Causes chapter was the one that rendered the highest number of deaths. ***Conclusion*:** The investigation allowed to qualify causes of death and demonstrated the need for professional training on the definition of the root cause of death.

***Keywords*:** Mortality. Mortality registries. Cause of death. Information systems.

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RESUMO: ***Introdução:*** Os óbitos classificados como causa *garbage* (CG) são considerados pouco úteis para desencadear ações de prevenção em saúde pública. ***Objetivo:*** Avaliar o impacto da investigação hospitalar na recuperação da verdadeira causa básica do óbito. ***Metodologia:*** Estudo descritivo sobre a investigação dos óbitos com causa básica classificada como código *garbage* em dez hospitais selecionados com maior número destes óbitos nos estados do Rio de Janeiro (RJ) e de São Paulo (SP) em 2017. A investigação considerou o prontuário do paciente, com coleta de informação realizada por profissionais da vigilância hospitalar em formulário padronizado. ***Resultados:*** Ocorreram 2.579 óbitos com GC e 2.116 com GC prioritária. A maior proporção se deu no grupo com 70 anos ou mais, com diferenças nas causas predominantes em função do ciclo de vida. A reclassificação da GC foi de 41,9% e 93,6% dos óbitos investigados no RJ e em SP, respectivamente. Óbitos com causas alteradas, mas que permaneceram com GC foram analisados quanto à mudança do nível de gravidade, que considera o potencial de impacto da GC sobre o perfil de mortalidade. Assim, 70,7% e 73,6% dos óbitos com GC de níveis de gravidade muito alto e alto foram reclassificados para níveis menores. Dentre os códigos *garbage* que passaram para causas bem definidas, o capítulo das Causas Externas da CID-10 foi o que recuperou o maior número de óbitos. ***Conclusão:*** A investigação possibilitou qualificar as causas de morte e evidenciou a necessidade de capacitação profissional sobre a definição da causa básica.

***Palavras-chave*:** Mortalidade. Registros de mortalidade. Causas de morte. Sistema de informação.

INTRODUCTION

The first statistics on all-cause mortality were published and presented by John Graunt in 1662, and disclosed in his book *Natural and Political Observations Mentioned in a Following Index, and Made Upon Bills of Mortality*. The author criticized the methods of recording and collecting mortality lists and the challenge in determining the true diagnosis of the cause of death[1].

Among the causes of death there are ill-defined causes, which are those declared as "symptoms", "signs" or by the expressions "undetermined cause", "unknown cause", "without medical assistance" and similar, which are part of Chapter XVIII of the International Statistical Classification of Diseases and Related Health Problems – 10th revision (ICD-10)[2,3]. The union of ill-defined causes–including external causes of undetermined intent and accidents without further specification (WFE), and violence without specifying the instrument that caused the injury–with incomplete or nonspecific diagnoses, as well as terminal causes that do not point to the true cause of death, result in the group called *garbage* causes (GC)[4,5]. These GC are not useful for promoting prevention actions in the field of public health, given the absence of the root cause or the specificity of diagnoses[6].

The number of deaths from ill-defined causes is related to the quality of mortality data and is traditionally used for health information systems and service evaluation purposes[2,3]. In this sense, and especially in contexts where there is a reduction in the percentage of ill-defined causes, the remaining GCs have been recently incorporated into the studies and analysis of services and the quality of data on causes of death[4].

In Brazil, deaths with ill-defined causes are decreasing, but the volume of GCs is increasing[5], which stresses the importance of evaluating and qualifying information on mortality with higher quality in order to allow for a more reliable diagnosis of the points to be strengthened in the healthcare system.

The states of RJ and SP are located in the Southeast region, with the third and first largest population contingent in the country, respectively. They have metropolitan areas with large urban agglomerations and social inequality, implying a higher risk of death, including GC. Deaths with GC in the state of RJ have been increasing; in 2007 they accounted for 38.5% of deaths and in 2016 it increased to 40.9%. In the state of SP, however, the percentage of GC over the historical series between 2007 and 2016 remained between 32% and 33%. The values observed in both states can be considered very high[7].

In 2017, the Ministry of Health implemented the investigation of deaths due to *garbage* causes in 60 municipalities of the country, including some in RJ and SP. Thus, the objective of this study was to evaluate the impact of hospital research on acquiring the true root cause of deaths recorded with GC in these states.

METHODS

This is a descriptive study evaluating the results of an investigation related to causes of death that were badly classified in the respective death certificate (DC), which occurred in selected hospitals in the states of Rio de Janeiro (RJ) and São Paulo (SP), in 2017, as a strategy to improve information on causes of death. The root cause of death in DC classified and coded as *garbage* was investigated using hospital records. The cases investigated were extracted from the Mortality Information System (MIS) with help of the *garbage* code list of the *Global Burden of Disease* study (GBD 2015)[8].

We selected the 10 hospitals responsible for the highest number of deaths with GC. Six are in RJ, located in the metropolitan region and 4 are in SP, located in 3 municipalities, 2 in the capital and 2 in the state suburb. The characteristics of the hospitals are:

- management type: 6 state-run (hospitals A, C, D, H, F, J) and 4 municipal-run (hospitals B, E, F, G);
- administration type: all 10 attend the Unified Health System and 3 also attend Supplementary Health (hospitals H, I, J);
- type of demand: 8 provide emergency services with open doors, ambulatory, and elective hospitalization of medium and high complexity (hospitals A, B, C, D, E, G, F, J);
- type of medical records: 6 handwritten (hospitals A, C, D, E, F, G), 3 electronic (hospital B, H, I) and 1 in both types (Hospital J);
- period of analysis: during 2017, 1 trimester (hospitals A, B, C, D, E, F, G), 2 trimesters (Hospital I), 3 trimesters (Hospital H), and 1 year (Hospital J). The periods investigated were according to the operational capacity of each hospital.

Initially, sensitization meetings were held with managers and professionals from the selected hospitals to discuss the proposal and achieve consensus and adherence to the work process. Support material was also presented: research form (IOCMD-H) and completion manual.

According to the work process defined, it was up to the states to extract the information from the list of deaths with GC per selected hospital in MIS; it was also up to the municipalities to review the coding and sequence of causes of death recorded in the DC, the support to hospitals in the investigation and the change in the local MIS of the root cause reclassified after investigation. In the selected hospitals, technicians from hospital epidemiological centers, death commissions and hospital infection commissions collected data and information from both the manual and the electronic medical records–which was not different for filling the IOCMD-H investigation form–, and reconstructed the causes of death. Subsequently, the root causes were certified by a doctor.

By using the GBD list (2015)[8], priority codes were selected for the study, as they have a large volume among deaths with GC, such as: septicemia (A40-A41); unspecified (UN) neoplasia (C26, C55, C76, C78, C79, C80); essential hypertension (I10); pulmonary embolism (I26); UN heart failure and heart disease (I50, I51); UN hemorrhagic or ischemic stroke (I64, I67.4, I67.9, I69.4, I69.8); pneumonia (J15.9, J18); respiratory failure (J96) and other respiratory disorders (J98); renal failure (N17, N19); ill-defined causes (IDC) (R00-R99 except R95); external causes of undetermined intent and UN accidents (Y10-Y34, X59); UN transport accidents and UN homicides (V89, Y09).

The data were organized on an Excel spreadsheet (Microsoft Office 2010), and in order to assess the impact of hospital research on improving information as well as its characteristics, the following death ratios were calculated over the period analyzed: original GC in the DC; Priority GC as previously mentioned; GC reclassified as well-defined causes; GC reclassified as another GC according to severity levels, as described in the application software Anaconda®[9,10], a tool used to assess the quality of mortality data10. In addition, GC was distributed according to age group, leading to four groups: 0 up to 9 years old; 10 up to 19 years old; 20 up to 69 years old; 70 years or older.

This study was approved by the Ethics Research Committee of the Universidade Federal de Minas Gerais (CAEE 75555317.0.0000.5149) and developed according to the ethical precepts established in Ordinance No. 466/2012 of the National Health Council.

RESULTS

The number of deaths that occurred during the period and in the set of selected hospitals was 6,720. Of these, 38.4% (n = 2,579) were classified as GC and, within this number, 82% (n = 2,116) as priority GC.

Table 1 shows the total volume of GC and priority GC per hospital. In the RJ hospitals, of the 1,666 GC deaths, 82.8% belonged to the priority GC list with varying proportions, with

the lowest percentage being 76.3% and the highest 87.4%. In the SP hospitals, the total was 913 GC deaths, of which 80.7% belonged to the priority GC list, ranging from 74.8% to 90.1%.

Table 1. Distribution of total deaths with garbage causes and causes priority garbage, in the last two states in the states of Rio de Janeiro and Sao Paulo, 2017.

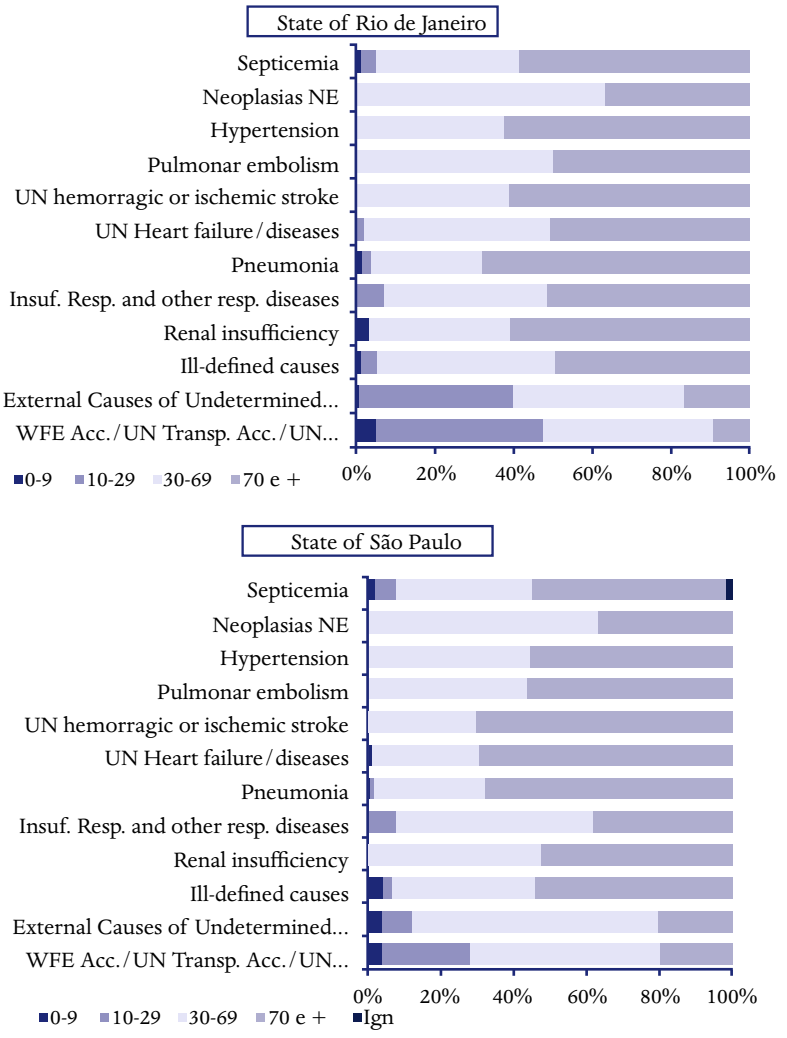
Selected hospitals	Total deaths	Total GC	Priority GC
Rio de Janeiro Hospital – A	368	207 (56.3%)	158 (76.3%)
Rio de Janeiro Hospital – B	673	400 (59.4%)	325 (81.3%)
Rio de Janeiro Hospital – C	250	132 (52.8%)	108 (81.8%)
Rio de Janeiro Hospital – D	573	30 (52.7%)	246 (81.5%)
Rio de Janeiro Hospital – E	723	446 (61.7%)	390 (87.4%)
Rio de Janeiro Hospital – F	325	179 (55.1%)	152 (84.9%)
Rio de Janeiro subtotal	2,912	1,666 (57.2%)	1,379 (82.8%)
São Paulo Hospital – G	389	103 (26.5%)	77 (74.8%)
São Paulo Hospital – H	2,309	487 (21.1%)	377 (77.4%)
São Paulo Hospital – I	594	191 (32.2%)	172 (90.1%)
São Paulo Hospital – J	516	132 (25.6%)	111 (84.1%)
São Paulo subtotal	3,808	913 (24.0%)	737 (80.7%)
Overall total	6,720	2,579 (38.4%)	2,116 (82.0%)

Source: Sistema de Informação sobre Mortalidade.

Graph 1 shows the distribution of GC deaths by age group in selected hospitals of both states, showing that the highest proportion occurred in individuals aged 70 years or older. In the RJ hospitals, pneumonia had a higher proportion (68.1%) for people over 70 years old among GC, whereas in the age group between 30 and 69 years neoplasms were more important (63.2%).

For deaths under 9 years, percentages were low and the main GC were WFE accidents, UN transport accidents and UN homicides.

In the SP hospitals, the distribution of deaths occurred mainly at the age above 70 years due to hemorrhagic or ischemic stroke (70.3%), heart failure and heart disease (69.6%), and pneumonia (67.8%). In people aged 20-69 years, the highest proportions of GC were due to external causes of undetermined intent and UN accidents (67.3%), UN neoplasms (63.5%), and respiratory failure and other respiratory disorders (53.8%). WFE accidents, UN transport accidents, and UN homicide accounted for the highest percentages in the 10-19 year age group, with 24%. For children under 9 years old, ill-defined causes of undetermined intent corresponded to 4.3%.



Graph 1. Distribution of deaths with Priority Garbage Causes (PGC), according to age group, in selected hospitals in the states of Rio de Janeiro and São Paulo, 2017.

Source: Sistema de Informação sobre Mortalidade.

Table 2 shows deaths with original GC (CB_O) and the proportion of reclassified deaths (CB_R) after the investigation, that is, whose original cause was changed due to it no longer being a GC or due to migrating to another GC. 41.9% of 1,379 deaths (CB_O) and 93.6% of 737 deaths (CB_O) were reclassified (CB_R) in the hospitals of RJ and SP, respectively. In the RJ hospitals, the distribution of deaths with original GC (CB_O) revealed a concentration of ill-defined causes, with 25.7%, and external causes of undetermined intent, with 24.7%, which together include more than 50.4% of GC. In hospitals of SP, the distribution of deaths with original GC (CB_O) was pneumonia with 30.8%, hemorragic or ischemic stroke with 14.9%, and UN neoplasms with 11.5%, which together account for 57.2% of the GC.

Table 2. Distribution of deaths with Priority Garbage Causes (PGC), according to age group, in selected hospitals in the states of Rio de Janeiro and São Paulo, 2017.

Priority garbage causes	Rio de Janeiro		São Paulo	
	CB_O n (%)	CB_R (%)	CB_O n (%)	CB_R (%)
Pneumonia (J15-J18)	251 (18.2%)	25.5	227 (30.8%)	96.5
Ill-defined causes (R00-R99 except R95)	355 (25.7%)	43.9	46 (6.2%)	69.6
External causes of undetermined intent (Y10-Y34)	341 (24.7%)	76.2	49 (6.7%)	95.9
UN hemorrhagic or ischemic stroke (I64)	103 (7.5%)	26.2	110 (14.9%)	95.5
Septicemia (A40-A41)	102 (7.4%)	19.6	51 (6.9%)	96.1
UN heart failure/disease (I50-I51)	55 (5.0%)	21.8	79 (10.7%)	96.2
UN neoplasia (C26 / C55 / C76 / C80)	19 (1.4%)	15.8	85 (11.5%)	92.9
Hypertension (I10)	64 (4.6%)	18.8	9 (1.2%)	88.9
Renal insufficiency (N17 and N19)	31 (2.3%)	22.6	19 (2.6%)	94.7
WFE acc./UN Transp. Acc./UN Hom. (X59, V89, Y09)	21 (1.5%)	19.0	26 (3.5%)	92.3
Respiratory failure and other respiratory disorders (J96 and J98)	29 (2.1%)	41.4	13 (1.8%)	92.3
Pulmonary embolism (I26)	8 (0.6%)	12.5	23 (3.1%)	95.7
Total	1,379 (100.0)	41.9	737 (100.0)	93.6

CB_O: original root cause (prior to investigation); CB_R: reclassified root cause; UN: unspecified.

Source: Sistema de Informação sobre Mortalidade.

Regarding GC reclassification after investigation (CB_R), in the RJ hospitals, external causes of undetermined intent presented the highest correction percentages, followed by ill-defined causes, with 76.2% and 43.9%, respectively. Pulmonary embolism, UN neoplasms, hypertension, WFE accidents, UN transport accidents, UN homicides and septicemia were not reclassified in more than 80% of cases. In the SP hospitals, reclassification (CB_R) occurred in 10 GC groups with more than 92%, where pneumonia, with 96.5%, heart failure and heart disease, with 96.2%, and septicemia, 96.1%, represented the highest proportions. Only hypertension and ill-defined causes had lower proportions, respectively 88.9% and 69.6%.

Table 3 presents the deaths that were reclassified after the investigation but remained as GC, distributed according to severity level, as described in Anaconda®[9,10]. This analysis allows to evaluate gains when the migration of cause of death shifts to a lower level of severity than the original cause. There were no records of original GC classified as medium level.

Table 3. Distribution of deaths with original GC, reclassified to other GC, second level of severity*. Selected hospitals of Rio de Janeiro and São Paulo, 2017.

Original severity levels*1	Level distribution		
	Level*1	n	Reclassified (%)
1 – Very high: Septicemia (A40-A41) = 8; Pulmonary embolism (I26) = 3; UN heart failure and heart disease (I50e I51) = 6; Respiratory failure and other respiratory disorders (J96 and J98) = 6; Ill-defined causes (R00-R99 except R95) = 72.	1	28	29.5
	2	24	25.3
	3	14	14.7
	4	29	30.5
Subtotal		95	100
2 – High: Hypertension (I10) = 6; external causes of undetermined intent (Y10-Y34) = 66.	1	2	2.8
	2	17	23.6
	3	1	1.4
	4	52	72.2
Subtotal		72	100.0
4 – Low: UN hemorrhagic or ischemic stroke (I64, I674, I679, I698) = 18; pneumonia (J15-J18) = 36.	1	12	22.2
	2	7	13.0
	3	2	3.7
	4	33	61.1
Subtotal		54	100.0

* Severity Levels: 1 – Very High; 2 – High; 3 – Medium; 4 – Low, according to rating in Anaconda®. UN: unspecified.
Source: Sistema de Informação sobre Mortalidade.

In the deaths that remained as GC after investigation, 95 had original GC with very high severity level and, after investigation, 70.5% showed gains, in that they were reclassified to lower severity levels; however, 29.5% of these deaths remained at very high severity level. Deaths with original GC at high level totaled 72, of which 73.6% were reclassified to another GC with lower severity, however, 23.6% remained at high level and 2.8% migrated to a very high level. Of the 54 deaths with low-level original GC, the investigation reclassified them and maintained 61.1% at low level–although the original cause was changed–and 38.9% at higher severity levels.

Table 4 shows the number of original GC deaths that, after investigation, were no longer GC and were reclassified to well-defined causes (n = 1,046 deaths); These reclassified causes are presented per ICD-10 chapter. It is noteworthy that the highest original GC values were in the pneumonia group (n = 247 deaths), followed by external causes of undetermined or ill-defined intent, representing more than 50% of all reclassified causes. Concerning the

reclassification by chapters, Chapter XX–which corresponds to external causes of undetermined intent–rendered the highest number of deaths (n = 329), followed by Chapter IX, diseases of the circulatory system, and chapter II, neoplasms.

Table 4. Distribution of deaths with Priority GC, reclassified by chapter ICD-10. Selected hospitals of Rio de Janeiro and São Paulo, 2017

Recovered (Original Priority GC) I		ICD-10 Chapters															
		I	II	III	IV	V	VI	IX	X	XI	XII	XIII	XIV	XVI	XVII	XVIII	XX
Septicemia	61	1	3	0	8	0	4	13	7	13	0	1	2	1	0	0	8
UN neoplasia	82	0	81	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Hypertension	14	1	0	0	3	0	0	7	0	0	0	0	1	0	0	0	2
Pulmonary embolism	20	1	5	0	2	0	0	8	0	0	1	0	0	0	1	0	2
UN stroke hem. or isch.	113	2	4	0	4	0	6	93	0	1	0	0	1	0	0	0	2
UN heart failure/disease	82	4	3	0	6	0	1	50	4	7	0	0	4	0	1	0	2
Pneumonia	247	14	20	3	18	5	14	72	37	20	1	0	21	0	0	0	22
Heart failure and other respiratory diseases	18	1	3	0	4	0	0	6	1	2	0	0	1	0	0	0	0
Renal insufficiency	25	2	1	0	5	0	1	5	3	0	0	1	4	0	0	0	3
Ill-defined Causes	115	5	17	1	20	9	4	24	5	7	1	0	2	0	0	0	20
External causes of undefined intent	241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	241
Accident WFE, UN transport accident, UN homicides	28	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	27
Total	1,046	31	137	4	70	14	30	278	58	51	3	2	36	1	2	0	329

I: Some infectious and parasitic diseases; II: Neoplasms (tumors); III: Blood and hematopoietic organ disease and some immune disorders; IV: Nutritional and metabolic endocrine diseases; V: Mental and behavioral disorders; VI: Diseases of the nervous system; IX: Diseases of the circulatory system; X: Respiratory tract diseases; XI: Diseases of the digestive tract; XII: Diseases of the skin and subcutaneous tissue; XIII: Diseases of the musculoskeletal system and connective tissue; XIV: Diseases of the genitourinary tract; XVI: Some conditions originating in the perinatal period; XVII: Congenital malformations, deformities and chromosomal anomalies; XVIII: Symptoms, signs and abnormal findings from clinical and laboratory examinations, not elsewhere classified; XX: External causes of morbidity and mortality. UN: Unspecified.

Source: Sistema de Informação sobre Mortalidade.

DISCUSSION

This study showed the impact of research on hospital records in the reclassification of deaths from GC into well-defined causes and the gains in the investigation process, although with percentage differences between the states of RJ and SP.

Although the states of Rio de Janeiro and São Paulo have relatively good quality of information[5], this study indicates how much the investigation process in hospital medical records and emergency medical bulletins can contribute to information retrieval, allowing to identify the true root cause of death. It is worth mentioning that, due to their characteristics, the largest volume of patients treated at RJ hospitals were victims of accidents or violence, in addition to other clinical emergencies, which are at high risk of death before opening medical records or performing examinations for diagnosis, which could be the reason for the percentage difference in reclassification of the selected hospitals in SP.

The investigation was performed in all deaths with GC, thus classified according to GBD (2015)[8], emphasizing the priority causes. These codes correspond to 82% of the total GC, being concentrated in few codes, pointing to problems in filling the DC with cause of death, either due to a systematic misdemeanor in the filling, or for fear of pointing the true root cause.

Regarding age groups, it is observed that the cause of death in children aged 0 to 9 years is better classified than among the elderly aged 70 years or older, as verified by Ishitani et al.[4] in their GC frequency study in the city of Belo Horizonte. It is likely that doctors find it more difficult to classify the cause of death in people of age or due to the root cause not being clear, or because the elderly have many comorbidities, as pointed out by Mello Jorge[11], which leads to misunderstandings in filling the multiple causes in the certificate DC.

The proportion of IDC in RJ was 25.7%, and in SP it was 6.2% for the participating units. The percentage observed in the city of RJ in 2017 was almost 3 times higher than that found by Cunha[11] in the same city in 2010 (8.6%), and also much higher than that of SP. The highest proportion found in this study was due to the fact that the RJ hospitals are located in the metropolitan region, have large emergency units, receiving severe cases with no previous clinical history, whereas the SP hospitals belong to a referenced care network. However, a positive finding observed for health facilities in the state of Rio de Janeiro was the percentage of IDC reclassification of 43.9%, higher than that observed by Cunha[12] for the Southeast region (31.6%) and for the capital of RJ (33.9%).

Premature deaths in young adults have a large percentage of external causes, either of undetermined intent or due to ill-defined accidents and UN homicides, which is related to the lifestyle and problems of metropolitan areas. On the other hand, in natural deaths neoplasia has the highest percentage in both states, leading to discussion about time and the way it is diagnosed and treated, and what has been done to prevent it.

Starting from their 80 years, women have a higher number of deaths with GC than men, which can be explained by the fact that women have a longer life expectancy, accumulating more diseases, which makes it difficult to define the true root cause of death.

This study has some limitations: first, as the sample was collected in only a few hospitals in the states of RJ and SP, the results do not represent the states as a whole. In addition, the data found in this study showed that part of the reclassification of causes of death, even those that were altered by the investigation, remained as GC. The change in severity levels was analyzed for these deaths, as described in Anaconda®[9]. Severity levels represent the impact that each GC group can have on the specific cause profile for public health intervention actions. As such, the higher the severity level, the lower the possibility of action, and vice versa. The levels are described in the application as follows: Level 1 – too high; Level 2 – High; Level 3 – Medium; and Level 4 – low. Considering that the hospitals in RJ had a high percentage of deaths with GC, the main objective of the investigation should be their reduction to deaths with well-defined causes. However, an alternate strategy should also consider changing from a very high or high GC severity level to lower levels.

During reclassification, pneumonia presented the highest absolute volume and approximately 30% of them migrated to circulatory diseases, but 15% still remained in the chapter of respiratory diseases; this is a relevant subject, since pneumonias may be present in the pathophysiological sequence of other diseases, or may actually be the root cause of death.

The major changes in chapters were septicemia, IDC, and renal failure. For the causes that remained in the chapter, there was gain in information, in that it was possible to reclassify the cause with a more specific qualification, as observed in neoplasms becoming specified and external causes of undetermined intent determining the circumstance of the event. The greatest success found in clarifying external causes of undetermined intent was due to the search in the Public Security databases. Original deaths from pneumonia were reclassified into twelve chapters, corresponding to the largest dismemberment volume.

The most reclassified chapters were circulatory diseases to natural deaths, and the chapter on external causes in violent but well-defined deaths, which corresponds directly to the country's mortality profile.

CONCLUSION

The investigation of GC deaths proved to be important to the qualification of causes of death. During the investigation process, it was observed that in addition to the qualification of the certifying physician, it would be necessary that the surveillance centers and/or death analysis committees be trained in defining the root cause of death and their important contribution to improvement of actions in Public Health.

It was also observed that the research sources (medical records and attendance bulletins) should contain the records of all people involved in patient care, as this would contribute to a better qualification of information about death. Investigation is understood as contributing little to the knowledge of the true cause of death of patients who arrive at the "already dead" health unit.

Although in RJ the external causes of undetermined intent occur mostly in health facilities, by legal determination they must be certified by legal medical institutes. Therefore, improving the quality of information on these deaths depends on information from security departments and/or alternative sources such as the media[13]. Thus, further integration between health departments and public safety is necessary, especially with regard to the terms used in both areas to know the intent that caused the injury, leading to death.

It is also essential to provide guidance to attending physicians and to train medical students and residents to adequately address the causes of death in the Block V of DC, aiming to implement public policies, both for preventing deaths and quality of care.

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