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Mortality of Homeless People in the City of São Paulo (Brazil): Data from 2015 to 2017.

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Abstract

Homeless people (HP) are composed of extreme poverty and the absence of regular conventional habitation. Some people argue that H.P. mostly dies due to hypothermia in the winter. The lack of knowledge about the leading causes of death of this population group limits our ability to prevent it, turn health policies more inconsistent, and favor the spread of infectious diseases like tuberculosis. The main goal of our study is to identify the leading causes of death for H.P. according to autopsy reports in the state of São Paulo. A cross-sectional descriptive study was conducted at the Faculty of Medicine of Sao Paulo University. We collected the data from 692 autopsy reports available in the Medico-Legal Institute of São Paulo State from 2015 to 2017. We found a total of 704 autopsy reports of H.P. and excluded twelve of them. Most of the people autopsied were male (628 – 90,8 %). The majority of the descendants were black or brown. The predominant cause of death was the natural one (78,9 %). Infectious diseases were responsible for 46,2 % of all deaths, followed by cardiovascular diseases (26,1 %).

Regarding the time of the year when the deaths occurred, we noticed a higher frequency in April to June (207 cases), which are the months corresponding to autumn in Brazil ($p < 0,001$). Still, we found only one case of hypothermia. Therefore, this study is critical because it shows that this population's deaths are preventable and claim better public health policies.

Keywords: mortality, homeless, Brazil

Introduction

Homeless people (HP) are composed of people who have in common "extreme poverty, interrupted or weakened family ties and the absence of regular conventional habitation." **[1]** They constitute a heterogeneous group, with characteristics directly related to the time and why they lived on the streets. These people represent the primary social exclusion in our country, with little or no family or affective relationship. They are not integrated into the labor market and have no effective social representation. Therefore, they are invisible to society.

Being inserted as a homeless population means to receive a charge of stereotypes represented by several terms such as beggars, wanderers, vagrants, itinerant, unfortunate; peddlers; drug addicts; troublemakers; delinquents, etc. These terms reveal a socially constructed typification matrix with the stigmatization of the H.P. **[2]**.

According to the Instituto de Pesquisa Econômica Aplicada (IPEA), Brazil has no official data on the homeless population since not even the population censuses could evaluate this group of people **[3]**.

The conditions of this population's live to complicate the accurate counting of this group since the number of people approached does not represent the number of people who live on the streets **[2]**.

Three main groups characterize the H.P. One group of people stay in the streets circumstantial, another group composed of people who use the roads to stay temporarily, and, finally, those who turn the streets into permanent residences.

Different situations lead people to live on the streets. For example, in the last century, the social position of the country led the people to a departure from the countryside to the urban region in search of better working conditions due to the country's industrialization was highlighted. Still, most of these people currently come from urban areas **[4]**, and 76 % live in the same city or nearby cities **[5]**.

The dependence on alcohol or other drugs, disruption of affective ties (marital separation) or family, the economic crisis resulting from job loss, or the simple pleasure of freedom is the main reason for people being homeless (PeLS) **[6]**. Among young people, family conflicts, sexual orientation (homosexuality) **[7]**, and has been in shelters during childhood [8] are the most cited determinants.

The life expectancy of H.P. is lower compared to the general population **[9]**. For example, they have a reduction from 16 to 28 years **[10]** in their lives.

They also have high rates of chronic diseases **[8,11]**. In addition, most of them are exposed to unhealthy environments, transmissible infectious diseases, chronic stress due to dramatic living conditions, inadequate and often contaminated food, mental disorders, and facilitated exposure to licit and illicit drugs **[12]**.

The vulnerability of PeLS to violence and illness has been the focus of government attention. As a result, the Ministry of Health of Brazil defined the guidelines for the organization and operation of the Street Clinic teams focused on primary care in psychosocial and health care, according to the foundations and procedures specified in the Basic Attention National Politics (PNAB) **[13]**.

In general, access to health services for the H.P. has significant obstacles to its effective guarantee, especially in primary care, which is an important predictor of health conditions. Although there is a persistent debate through Brazilian society: how H.P. dies? What are the causes of their death? How can we prevent the fatal outcome? There are some hypotheses that this population fails in winter and hypothermia could cause death. However, there is no objective confirmation of such a thing. The lack of knowledge about the leading causes of illness and end of this population group also limits our understanding in respect of the natural causes of death among this population, difficulty health policies to prevent these deaths, and also the spread of infectious diseases as tuberculosis, for example **[14]**.

Objective

The main goal of our study is to identify the leading causes of death for homeless people according to autopsy reports in the state of São Paulo, confirming or not if most of these deaths occur in winter caused by hypothermia.

Methods

A cross-sectional descriptive study was conducted at the Faculties of Medicine Sao Paulo University, Universidad Nove de Julho, and ABC School of Medicine. The data were obtained from autopsy reports available in the system of the Forensic Unit of São Paulo State (Brazil) from 2015 to 2017.

The variables extracted from the autopsy reports were the cause of death, age, sex of the victim, period of the year and region of the city in which the death occurred, place of death, and toxicological tests results.

We included autopsy reports that had the confirmation by the police authority that the victim was a homeless person, with the determination of the place where the autopsy was performed and the month of the occurrence of death. We excluded incomplete reports.

We tabulated the data in Microsoft Excel®. The choice of measures of central tendency and dispersion of the values that made up the samples and the statistical tests for comparison between them was based on the types of distribution. Distributions were defined as parametric or non-parametric using the Kolmogorov-Smirnov test according to the SPSS® version 17.0 statistical program (SPSS® Inc; Ilinois, USA). The values obtained by studying each continuous variable with parametric distribution were organized and described using the mean and standard deviation for non-parametric variables, the median and interquartile range. For categorized ones, absolute and relative frequencies were the choice. To compare the means of two parametric sample populations, we use Student's "t" test. Analysis of variance (ANOVA) with Bonferroni's auxiliary test was used between the means of three or more populations and T-tests for paired studies. For two non-parametric sample populations, the comparison was made using the Mann-Whitney test. The Kruskal-Wallis test with Dunn's auxiliary test was applied between three or more people, and in the paired analyses, the Wilcoxon and Friedman tests were applied, respectively. Comparisons of the frequency of a phenomenon between groups of categorized variables were performed using Fisher's exact test and the chi-square test. In the multivariate analysis, we used the odds ratio tests and linear and logistic regressions. To verify the existence of a correlation between two continuous variables, Pearson's correlation tests were used for Spearmann's parametric variables for non-parametric variables.

Ethical aspects: Informed consent was not required because this was a retrospective research project, making it unfeasible to obtain permission from the patient's guardian or legal representative. The study was approved by the Ethics and Research Committee of the University of São Paulo - CAAE: 93558618.7.0000.0065.

For this study, homeless people were not sheltered, and live-in conditions are not meant for human habitation (streets, overpasses, parks, abandoned cars, and buildings).

Results

A total of 704 reports were analyzed between 2015 and 2017. Twelve (12) reports were excluded after applying the inclusion criteria. One hundred and seventy-five (25 %) autopsies were performed in 2015; 291 autopsies in 2016 (42 %) and 226 (33 %) in 2017. These numbers show a 66 % increase between 2015 and 2016 and a 22 % decline between 2016 and 2017. Most of the people autopsied were male (628 – 90,8 %, p < 0,001), with no significant difference between the three years analyzed (p = 0,418).

Regarding the age range, there was a more excellent distribution of cases among the 31 to 60 age groups, with a predominance of the fifth and sixth decades (p < 0,001). Concerning the comparison between genders, there was a difference in the distribution of cases only in the 21 to 30 age group, predominantly female (p < 0,001). Therefore, all other age groups showed similar distribution between the genders. **(Table 1)**

Table 1: Age distribution

Ages	Female n (%)	Male n (%)	Total n (%)
< 16	0	2 (0,3)	2
16 - 20	0	5 (0,8)	5 (0,7)
21 - 30	17 (26,6)	37 (5,9)	54 (7,8)
31 - 40	20 (31,3)	135 (21,5)	155 (22,4)
41 - 50	10 (15,6)	178 (28,3)	188 (27,2)
51 - 60	8 (12,5)	156 (24,8)	164 (23,7)
61 - 70	5 (7,8)	75 (11,9)	80 (11,6)
> 71	1 (1,6)	26 (4,1)	27 (3,9)
Not informed	3 (4,7)	14 (2,2)	17 (2,5)
	64	628	692

The medical examiner declared the people's skin color in the autopsy report, and the majority was described as black (p < 0,001), being 143 black and 317 brown, and 231 white and one yellow.

The majority of deaths (57,7 %) occurred after hospitalization (p<0,001). There was a predominance of individuals over 60 years old. There was no difference between genders (p = 0,536) in these cases. However, in the age group between 30-60 years, the death occurred also in hospitals or on the street (p = 0,014).

The predominant cause of death was the natural one, with 546 cases (78,9 %). The external causes were responsible for 146 patients (21,1 %), representing a difference between them (p < 0,001). There was no statistical difference between genders regarding natural and external causes of death (p=0,438). Among the casualties from external causes, 55 were violent, and 91 were considered unintentional accidental **(Table 2)**.

Table 2: Distribution of deaths from external causes, caused or not by third parties

	Causes of death described in autopsy reports	n
Violent	Trampling	25
	Suicide	1
	Total	55
External not caused by third parties (accidental)	Intoxication	23
	Traumas	62
	Traumatic brain injury	51
	Polytrauma	9
	Abdominal trauma	2
	Electroplession	4
	Burn	1
	Mechanical asphyxiation	1
	Hypothermia	1
	Total	91

The coroner performed toxicological exams in 150 cases (21,7 %), of which 64 were positive for some substance and 86 (12,4 %) were negative. Thirty-nine (39) reports show the presence of ethyl alcohol, and in 32, the serum concentration of ethyl alcohol was lower than 4g/L. In seven, it was higher than 4g/L. In addition, seven tests showed that methyl alcohol (methanol) was detected, in 17 positivity for cocaine (alone or associated with another substance) and one for chloroform and trichloroethylene. However, the low number of toxicological tests performed made the statistical analysis of the results not possible.

The coroner attributed as the primary cause of death to exogenous intoxication in 23 of the reports. Of these, nine cases showed the presence of cocaine in isolation. In six points, the tests showed cocaine associated with alcohol (two methyls and four ethyls). Only one patient showed cocaine associated with promethazine with carbamazepine. Four reports related death to the use of ethyl alcohol alone, two to the use of methanol, and one to the association of chloroform and trichloroethylene. **(Table 3)**.

Table 3: Results of toxicological tests in cases of deaths attributed to exogenous intoxication according to the autopsy reports

Toxicological test			**Cause of death**
Cocaine ng/mL	**Alcohol g/dL**	**Other substances**	**Intoxicated by**
668	Negative	Negative	Cocaine
Negative	Ethanol 4.2	Negative	*Ethyl alcohol*
240	Negative	Negative	Cocaine
Negative	Methanol 4.0	Negative	M*ethyl alcohol*
Positive	Negative	Negative	Cocaine
Positive	Methanol 4.2	Negative	Cocaine and methanol
Positive	Negative	Negative	Cocaine
Positive	Methanol 3.3	Negative	Cocaine and methanol
Positive	Negative	Promethazine + carbamazepine	Cocaine+ Promethazine + carbamazepine
525	Ethanol 1.4	Negative	Cocaine and ethanol
Negative	Methanol 4.5	Negative	M*ethyl alcohol*
Positive	Methanol 3.1	Negative	Cocaine and methanol
Negative	Ethanol 3.7	Negative	*Ethyl alcohol*
202	Ethanol 0.6	Negative	*Ethyl alcohol*
26	Ethanol 4.1	Negative	Cocaine and ethanol
390	Negative	Negative	Cocaine
Positive	Methanol 1.3	Negative	Cocaine and methanol
91	Negative	Negative	Cocaine
59,0	Negative	Negative	Cocaine
Positive	Negative	Negative	Cocaine
Positive	Negative	Negative	Cocaine
Negative	Ethanol 5.0	Negative	*Ethyl alcohol*
Negative	Negative	Chloroform +Trichloroethylene	Chloroform+Trichloroethylene

Of the natural causes (546 reports), infectious diseases were responsible for 46, 2 % ($p < 0,001$) of all deaths, followed by cardiovascular diseases (26,1 %), as shown in Table 4. There was no difference between the genders regarding the cause of death ($p=0,362$). In both genders, people between 41 and 60 years old were the most affected. When we analyze young people between 31-40 years of age, natural causes no longer predominate, with traumas becoming more prevalent ($p=0,003$).

Table 4: Distribution of natural deaths according to the underlying cause described in reports

Basic cause	n	%
Infectious	320	46,2
Pulmonary	290	41,9
Bronchopneumonia	270	39,0
Tuberculosis	16	2,3
Bronchoaspiration	4	0,6
Cardiovascular	180	26,1
Gastrointestinal	35	5,1
Neoplasia	11	1,6
Total	547	79

Finally, regarding the time of the year when the deaths occurred in the three years, we noticed a higher frequency in April to June (207 cases), which are the months corresponding to autumn in Brazil ($p < 0,001$). In the winter and spring months, there were 180 cases (26 %) each, and in the summer, 125 (18,1 %).

Discussion

IPEA estimated that in 2017 more than 101 thousand Brazilians were homeless. In the municipality of São Paulo, in 2019, 24.344 people were in this condition, of which 85 % were male with ages ranging from 1 to 89 years (average of 41,6 years). The data obtained from the São Paulo municipal census agree with the profile of the cases analyzed in this study. The peak age of higher frequency was between 31 and 49 years, and in the group analyzed in this study, it was between 41 and 50 years **[15,16]**.

The profile of PeLS, according to the data obtained in necroscopic reports, was male, non-white, and aged between the fourth and fifth decades, results that are similar to the Brazilian study published in 2015 **[17]**.

In Brazil, data from the Unic System of Health (DATASUS) showed that in 2018, 1,3 million people died mainly from diseases of the circulatory system, neoplasms, or external causes. Interpersonal violence is the leading cause of death in young people aged 15 to 49 years (47 %), followed by traffic accidents (25 %). Among people between 30 and 49 years old, deaths from external causes were followed by circulatory system diseases in the general population. In comparison, after 50 years old, circulatory system diseases took the first position, followed by cancer **[18]**.

PeLS deaths are considered premature due to the physical fragility of these people with a greater predisposition to infectious diseases and those resulting from psychiatric disorders, alcohol and other drug abuse, and cardiovascular diseases. The longer the time spent on the streets, the higher the rates of illness. The mortality rate of PeLS is three to 13 times higher than that of the general population, as stated in a study that evaluated mortality in the United States of America **[19]**, Canada **[20]**, and Europe **[21]**. But social exclusion is undoubtedly closely linked to this higher mortality rate **[22]**.

A British study described those deaths from external causes ranked first on the list of most frequent causes, totaling 21.7 % of PeLS deaths, followed by neoplastic (19 %) and digestive tract diseases (19 %) **[23]**. In our series, external causes of death of H.P. represented a similar percentage (e.g., 21,1 %), but we found only one case of hypothermia.

Infectious diseases are highly prevalent in H.P., especially those of the respiratory system, where tuberculosis is prominent. The digestive system predominates hepatitis B and C and illnesses caused by contaminated food. In addition, infection by the human immunodeficiency virus (HIV) is also prevalent in this population. Respiratory illness is seven times more deadly in PeLS compared to the general population. The principal agents are *Streptococcus pneumonia*, *Pneumocystis carinii*, *Hemophilus influenzae* type b, and *Mycobacterium tuberculosis* **[24]**.

The condition of being homeless enables more significant contamination in association with low immunity due to malnutrition, restricted access to medical care, and failure to adhere to treatment. All these factors increase the risk of infections with fatal outcomes. Pulmonary diseases accounted for almost 42 % of deaths in the series of reports analyzed, and pulmonary tuberculosis appears in 16 pieces.

The autopsy reports analyzed showed that cardiovascular diseases were the most frequent primary causes of death, which agrees with the literature **[25]**. In addition, studies have shown that victims with psychiatric illnesses, chemical dependents **[26]**, males, and between 45 and 64 years have a higher risk of death from cardiovascular diseases **[27]**. Therefore, the data obtained in the survey of the reports did not prove the presence of psychiatric illness or chemical addiction. Still, the age and sex of the patients agreed with the literature.

In this study, we considered alcohol poisoning or intoxication caused by cocaine accidental because the ingestion was

voluntary, and the outcome was not intentional. Overdose deaths are prevalent in H.P. A study conducted in the city of Boston with 28,033 homeless adults concluded that one out of every three deaths was linked to overdose, especially of young people **[19]**. Alcohol (63.5 %), opioids (53.9 %), heroin (40.6 %), and cocaine (40.2 %) being the substances most related to PeLS deaths **[28]**.

In Brazil, a previous study indicates that the substances most used by H.P. are alcohol and marijuana. Other substances found were cocaine, crack, benzodiazepines. Amphetamines, firelighters, trichloroethylene, glue, and a mix of chloroform and ether **[29]** are used too. Only 5 % reported the use of LSD or ecstasy **[17]**.

The high prevalence of alcohol use (ethyl and methyl) and death by poisoning were observed in the population studied. This event is one of the most frequent related to substance abuse in any human population.

In the selection of reports analyzed, the high rate of deaths associated with cardiovascular causes was observed. In this aspect, we should consider the high probability of chronic consumption of alcohol and cocaine by the PeLS since we have a significant percentage of deaths associated with alcohol intoxication and positive toxicology tests for cocaine. Regular alcohol use is associated with myocardial degeneration, decreased cardiac output **[30]**, and early onset of atherosclerosis and endothelial damage. The use of cocaine is associated with constriction of the coronary arteries and, consequently, reduced blood supply to the myocardium, with a predisposition to arrhythmias **[31]**.

In developed countries, cancer associated with alcohol consumption was the leading cause of death in both sexes. Tuberculosis was the leading cause of death in both sexes in developing countries, followed by cirrhosis and other chronic liver diseases **[32]**.

PeLS morbidity and mortality are influenced by climate change in temperate countries, and death from hypothermia can be 13 times more frequent than the general population. Cardiovascular and respiratory diseases are the most susceptible to environmental conditions, but smoking, alcohol, and other drug use also contribute to shortened life spans **[10]**.

Brazil is a tropical country with milder temperatures, even in the winter months, so the climatic issue related to death from hypothermia should not be considered as the cause most associated with H.P. mortality, as our series showed.

The studied reports showed that the highest rates of deaths from infectious respiratory and cardiovascular diseases occurred in the autumn months. In Brazil, between 2015 and 2017, the autumn months were warmer and with lower than usual air humidity rates. Low air humidity associated with temperature fluctuations are determinants for infectious diseases by arboviruses, contaminated food, urinary tract infection, and cardiovascular diseases. On the other hand, dry air with a high concentration of pollutants in the atmosphere and extreme temperature variations are responsible for increasing diseases **[10,33]**.

The pathophysiology linking cold with deaths occurs due to the cold's cardiovascular and respiratory effects. Low temperatures provoke changes in blood pressure to mediate cardiovascular stress. Plasma fibrinogen, blood viscosity, and consequent vasoconstriction and inflammatory response are responsible for the fatal outcome. In addition, low temperatures induce bronchoconstriction. Furthermore, the suppression of mucociliary production and other inflammatory reactions elevate the risk of lung infections. This physiological response may persist longer than those related to heat and provide a more significant challenge to the life of this population when it occurs for an extended period, so it is attributed to moderately cold days **[10,33]**. However, given the results obtained, it is impossible to associate climatic conditions with the higher mortality rate, even if a slight decrease occurred in the autumn months.

Final Considerations

We analyzed 692 autopsy reports between 2015 and 2017 of people identified by the police authority as homeless. The leading underlying cause of death was natural, specifically pulmonary infectious and cardiovascular diseases. The association between the chronic use of alcohol and the deaths was not possible because there was no such record in the reports. Furthermore, the highest rates of deaths from infectious respiratory and cardiovascular diseases that occurred in the autumn months (with 68 Fahrenheit degrees at minimum) show no relation between cold and a suspicious cause of death by hypothermia. However, this study is critical because it shows that this population's deaths, which grow proportionally to its economic crisis, die from preventable causes. This fact must be considered by the health authorities.

Authors contributions:

[1,2,3,4]: collected the data

[5]: Write the original draft

[6]: Conceptualization of the study and revised the final draft

Compliance With Ethical Standards

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Research involving Human Participants and/or Animals: Do not apply

Informed consent: Do not apply

Ethical Approval: The study was approved by the Ethics and Research Committee of the University of São Paulo - CAAE: 93558618.7.0000.0065.

References

1. Brasil. Presidência da República. Casa Civil Decreto nº 7.053 de 23 de dezembro de 2009. Diário Oficial da Uniao; 2009.
2. Comitê Intersetorial da Política Municipal para a População em Situação de Rua. Prefeitura Municipal da Cidade de São Paulo; 2015.
3. Natalino MAC. Estimativa da população em situação de rua no Brasil. IPEA; 2016.
4. Sicari AA, Zanella AV (2018) Pessoas em Situação de Rua no Brasil: Revisão Sistemática. Psicol cienc prof. outubro de. 38(4): 662–79.
5. Brasil. População em situação de rua no Brasil: o que os dados revelam? Ministério de Cidadania; 2019.
6. De Alcantara SC, Pereira de Abreu D, Araújo Farias A (2015) Pessoas em Situação de Rua: das Trajetórias de Exclusão Social aos Processos Emancipatórios de Formação de Consciência, Identidade e Sentimento de Pertença. Rev colomb psicol. 17 de maio de. 24(1): 129–43.
7. Rosario M, Schrimshaw EW, Hunter J (2012) Risk factors for homelessness among lesbian, gay, and bisexual youths: A developmental milestone approach. Children and Youth Services Review. 34(1): 186–93.
8. Fazel S, Geddes JR, Kushel M (2014) The health of homeless people in high-income countries: descriptive epidemiology, health consequences, and clinical and policy recommendations. The Lancet. 384(9953): 1529–40.
9. Nusselder WJ, Slockers MT, Krol L, Slockers CT, Looman CWN, et al. (2013) Mortality and Life Expectancy in Homeless Men and Women in Rotterdam: 2001–2010. da Silva Nunes M, organizador. PLoS ONE [Internet]. 8(10): e73979.
10. Romaszko J, Cymes I, Dragańska E, Kuchta R, Glińska-Lewczuk K (2017) Mortality among the homeless: Causes and meteorological relationships. Shaman J, organizador. PLoS ONE. 12(12): e0189938.
11. Montgomery AE, Szymkowiak D, Marcus J, Howard P, Culhane DP (2016) Homelessness, Unsheltered Status, and Risk Factors for Mortality: Findings From the 100 000 Homes Campaign. Public Health Rep. 131(6): 765–72.
12. Schinka JA, Leventhal KC, Lapcevic WA, Casey R (2018) Mortality and Cause of Death in Younger Homeless Veterans. Public Health Rep. March. 133(2): 177–81.
13. Brasil. Ministério da Saúde Portaria n0 122 de 25 de janeiro de 2011. Diretrizes de organização e funcionamento das equipes de Consultório na Rua. Diário Oficial da Uniao; 2011.
14. Carneiro Junior N, Jesus CH de, Crevelim MA (2010) A Estratégia Saúde da Família para a equidade de acesso dirigida à população em situação de rua em grandes centros urbanos. Saude soc . 19(3): 709–16.
15. FIPE. Pesquisa censitária da população em situação de rua, caracterização socioeconômica da população adulta em situação de rua e relatório temático de identificação das necessidades desta população na cidade de São Paulo. Fundação Instituto de Pesquisas Econômicas; 2015.
16. Pesquisa censitária da população em situação de rua - São Paulo SP. Prefeitura de São Paulo; 2019.
17. Barata RB, Carneiro Junior N, Ribeiro MCS de A, Silveira C (2015) Desigualdade social em saúde na população em situação de rua na cidade de São Paulo. Saude soc. 24(suppl 1): 219–32.
18. Ministério da Saúde. Sistema de Informações sobre Mortalidade - SIM [Internet]. DATASUS, MS/SVS/CGIAE; 2017.
19. Baggett TP, Hwang SW, O'Connell JJ, Porneala BC, Stringfellow EJ, et al. (2013) Mortality Among Homeless Adults in Boston: Shifts in Causes of Death Over a 15-Year Period. JAMA Intern Med. 173(3): 189.
20. Hwang SW, Wilkins R, Tjepkema M, O'Campo PJ, Dunn JR (2009) Mortality among residents of shelters, rooming houses, and hotels in Canada: 11-year follow-up study. BMJ . 339(oct26 3): b4036–b4036.
21. Lester H, Wright N, Heath I, RGCP Health Inequalities Standing Group. (2002) Developments in the provision of primary health care for homeless people. Br J Gen Pract. 52(475): 91–2.
22. Aldridge RW, Story A, Hwang SW, Nordentoft M, Luchenski SA, et al. (2018) Morbidity and mortality in homeless individuals, prisoners, sex workers, and individuals with substance use disorders in high-income countries: a systematic review and meta-analysis. The Lancet. 391(10117): 241–50.

23. Aldridge RW, Menezes D, Lewer D, Cornes M, Evans H, et al. (2019) Causes of death among homeless people: a population-based cross-sectional study of linked hospitalisation and mortality data in England. Wellcome Open Res. 4: 49.
24. Raoult D, Foucault C, Brouqui P (2001) Infections in the homeless. The Lancet Infectious Diseases. 1(2): 77–84.
25. Lee TC, Hanlon JG, Ben-David J, Booth GL, Cantor WJ, et al. (2005) Risk Factors for Cardiovascular Disease in Homeless Adults. Circulation. 111(20): 2629–35.
26. Gozdzik A, Salehi R, O'Campo P, Stergiopoulos V, Hwang SW (2015) Cardiovascular risk factors and 30-year cardiovascular risk in homeless adults with mental illness. BMC Public Health. 15(1): 165.
27. Hwang SW, Orav EJ, O'Connell JJ, Lebow JM, Brennan TA (1997) Causes of Death in Homeless Adults in Boston. Ann Intern Med. 126(8): 625-628.
28. Bauer LK, Brody JK, León C, Baggett TP (2016) Characteristics of Homeless Adults Who Died of Drug Overdose: A Retrospective Record Review. Journal of Health Care for the Poor and Underserved. 27(2): 846–59.
29. FIOCRUZ. III Levantamento Nacional Sobre o Uso de Drogas Pela População Brasileiras. ICICT/FIOCRUZ; 2017.
30. Repetto Kuhn G, Repetto Jiménez M. Toxicología fundamental (4a. ed.) Ediciones Díaz de Santos; 2010. 316 p.
31. Di Maio VJM, Dana SE (2006) Handbook of forensic pathology. 2nd ed. Boca Raton: CRC/Taylor & Francis. 167 p.
32. Griswold MG, Fullman N, Hawley C, Arian N, Zimsen SRM, et al. (2018) Alcohol use and burden for 195 countries and territories, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. The Lancet. 392(10152): 1015–35.
33. Dang TN, Seposo XT, Duc NHC, Thang TB, An DD, et al. (2016) Characterizing the relationship between temperature and mortality in tropical and subtropical cities: a distributed lag non-linear model analysis in Hue, Viet Nam, 2009–2013. Global Health Action. 9(1): 28738.