

Analysis of emergency healthcare demand in a prison

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ABSTRACT

Objective: To analyze the reasons for seeking emergency medical care amongst prison inmates and their relationship to socio-demographic characteristics.

Material and method: An observational, descriptive and retrospective study was carried out. We collected the sociodemographic variables of inmates and their healthcare needs at the referral hospital over nine years.

Results: A total of 972 hospital visits were included. The most common healthcare needs, in descending order, were multiple trauma, limb problems and dyspnea. Mondays and Wednesdays were found to be the busiest days ($P < 0.001$). The average stay in cases of hospitalization was 6.1 (SD: 4.3) days; patients with nontraumatic healthcare needs required a longer stay. The majority of the inmates native to Africa, Asia and America received emergency healthcare services due to traumatic injuries; by contrast the most common injuries among Europeans were non-traumatic and unrelated to suicide attempts ($P < 0.001$). European inmates were on average 4.2 years older than Africans and 4.7 years older than American inmates ($P < 0.001$).

Discussion: The reasons for seeking emergency care are clearly differentiated according to the inmates' nationality, one notable outcome was the greater longevity of European internees. These results highlight the importance of understanding healthcare demand within the prison system in order to better address considerations such as prevention, organization and the location of healthcare units.

Keywords: emergency medicine; emergencies; prisoners; public health.

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INTRODUCTION

Figures show that more than 58.000 persons were incarcerated in Spanish prisons in August 2019¹. The United Nations has established the right of the prison population to adequate healthcare. However, this group presents higher levels of morbidity and mortality than the rest of the population²⁻⁴.

There has been a change in the legal treatment of criminal behaviour and the offender in terms of form and content, with a progressive shift towards the concept of sentencing as a means of social rehabilitation rather than as a punishment whose purpose is limited solely to social dissuasion⁵.

The Spanish prison system applies a reformist policy, and as such takes into account the offence

and the offender's responsibility. However other notions coexist within the system, such as the desire for change, a recognition of human dignity, the overall objective of social reinsertion and respect for inmates' individual human rights⁵.

An important factor is that the conditions imposed by imprisonment exacerbate the symptoms of patients with mental illness, which leads to rates of suicide and psychopathologies that are much higher than those found in the community⁶⁻⁸. The profound impact of personality on criminal behaviour has also been observed⁹: studies carried out on the prison population have found a prevalence of mental illness that is up to eleven times greater than in the general public¹⁰. In Spain, 17.6% of inmates have a background of or present mental disorders. Records show that 2.7%

of inmates have attempted suicide or suffer from secondary lesions¹¹. The presence of psychopathologies also leads to increased use of hospital emergency services (A&E)¹².

There are few international¹³⁻¹⁶ or Spanish^{17,18} studies on the reasons why prison inmates ask for medical treatment.

A clearer picture of the health needs of the prison population could therefore help in establishing preventive strategies to improve inmates' health, and optimise management of the resources of the emergency services they are referred to^{19,20}.

The aim of our study was to analyse the reasons for emergency hospital care of inmates at a Spanish prison and to see what links such motives might have with inmates' sociodemographic characteristics.

MATERIALS AND METHODS

An observational, descriptive and retrospective study was carried out that included all the inmates of a Spanish prison who went to the emergency services of the referral hospital from 2006 to 2014 (both inclusive). The prison holds only male convicts and has an average population of 524.8 persons/month. The prison provides medical treatment and nursing services in the mornings (from 08:00 to 15:00 h) and has no hospitalisation unit. It also offers a range of programmes: occupational health and safety, suicide prevention and conflict resolution to prevent aggressive behaviour towards psychiatrists, psychologists and social workers. The name of the prison where the study took place was not revealed to ensure the anonymity of all the study participants.

After obtaining authorisation from the Prisons Department of the Ministry of Home Affairs and from the prison management, face to face interviews were used to compile the data. The researchers had no access to information that could identify the participants during or after the data gathering process. The process was also carried out in accordance with the ethical guidelines of the Council for International Organisations of Medical Sciences, the Helsinki Declaration and Organic Law 3/2018, of 5 December, on the Protection of Personal Data and Guarantees of Digital Rights.

Several sociodemographic variables were gathered (age and nationality), along with others on the emergency healthcare demand from inmates (date and reason for consultation, care diagram according to the Manchester Triage System²¹, admission and duration of hospital stay). One single researcher

was responsible for the data gathering procedure to prevent bias during the process.

The IBM SPSS Statistics program for Windows (version 22.0) and the R Statistical Software (version 3.6.2) were used to analyse the data. Arithmetic mean, standard deviation and rank were used to describe the quantitative variables. The qualitative variables were expressed via frequencies and percentages. A chi-squared bivariate analysis was then carried out to compare the different qualitative variables. Normality and homocedasticity were checked with the Shapiro-Wilk test and Bartlett test. The sample distribution did not meet normality criteria, and so the Kruskal-Wallis test was used to compare qualitative variables with two or more categories with quantitative variables. If they were statistically significant, post hoc tests with Tamhane's T2 test were carried out.

RESULTS

972 referrals to A&E from 614 inmates were observed (with a minimum of 1 and a maximum of 6 visits per person), corresponding to an average incidence rate of 4.9 visits/year. Only 2 deaths are recorded in the 9 years.

The characteristics of the population and emergency demand can be seen in Table 1 and Figure 1, respectively.

The most prevalent nationalities were: Spanish (78.4%), Moroccan (5.1%), Romanian (3.3%) and Algerian (2.2%).

Significant differences ($p < 0.001$) were found between the age of persons who went to A&E and their continent of origin. European users were older (an average of 38.4 years), while the youngest were Asian (31.7 years). The results of the post hoc tests showed that European inmates were on average 4.2 years older than Africans and 4.7 years older than South American inmates.

Aetiological categorisation of the reasons for visiting A&E showed that the most common motives were non-traumatic lesions and other injuries unrelated to suicide attempts (48.6%), followed by traumatic lesions (41.2%) and self-inflicted injuries (10.2%) (Table 1).

The most common reason for examination at A&E when they were classified within the MTS care diagrams was multiple trauma (226 visits; 23.3%), followed by dyspnoea (83 visits; 8.6 %) and limb problems (83 visits; 8.6%) (Figure 1). According to the MTS, "self-injury" is a single diagram that can include traumatic and non-traumatic injuries.

A link was found between the continent of origin and the reason for visiting A&E ($p < 0.001$), where 50% of the European inmates were treated for non-traumatic issues or self-harming, 56.8% of the African inmates and 60% of the Asians did so for traumatic injuries, while 52.1 and 47.9% of the South Americans were treated for traumatic injuries and other problems respectively.

Significant differences ($p < 0.001$) were also found between the number of days of hospital admission and the type of lesion, in which the “others” group was the one that needed the longest stay in hospital (12.9 days), followed by the “self-injury” group (10.4 days).

Finally, a statistical relation ($p < 0.001$) was also found between the number of visits and the day of the week. Sundays was the day when there were fewest visits (8.2%), while Mondays and Wednesdays were the days with most visits (16.6% and 16.7%, respectively).

DISCUSSION

The aim of this study was to analyse the reasons for emergency hospital treatment of inmates of a Spanish prison, and to discover any statistically significant differences that might be related to the prisoners’ nationality.

The response to emergency healthcare demand is a highly complex issue and the interaction of citizens with the medical services in this area is very frequent and necessary. Nowadays, this type of care forms part of a comprehensive system that brings together all the different healthcare levels involved to provide a single medical process²².

The emergency services in Spain are witnessing a constant increase in demand, to the extent that there has been an increase from 11.5% of the population attended in 1987 to 30.1% in 2017²³, which makes it difficult to provide the rapid and effective care that is so necessary in this area²⁴.

Although further knowledge about prisoners’ demand for emergency medical treatment is a matter of interest for the Spanish National Health System, there is little in the way of literature on this sector of the population and their issues with hospital treatment^{13,17,18} and in primary healthcare¹⁴.

This study looked at 972 visits made by prison inmates to the A&E services in a given period (with an average of 108 visits/year and an incidence rate of 4.9 visits/year). The number of visits was much lower than the one mentioned in a study carried out

Table 1. Sociodemographic factors and healthcare-related characteristics.

	Mean	SD	Min.	Max.	N	%
Age	37.7	10.3	18	81		
Days of hospitalisation	6.1	4.3	1	18		
Age group						
30 years or less					251	25.8
31-60 years					296	71.6
Over 60					25	2.6
Continent of origin						
Europe					826	85.0
Africa					88	9.1
Asia					10	1.0
South America					48	4.9
Day of the week						
Monday					162	16.7
Tuesday					148	15.2
Wednesday					163	16.8
Thursday					142	14.6
Friday					156	16.0
Saturday					121	12.4
Sunday					80	8.2
Month						
January					81	8.3
February					76	7.8
March					73	7.5
April					89	9.2
May					101	10.4
June					66	6.8
July					95	9.8
August					80	8.2
September					71	7.3
October					87	9.0
November					85	8.7
December					68	7.0
Year of visit						
2006					113	11.6
2007					131	13.5
2008					94	9.7
2009					152	15.6
2010					106	10.9
2011					116	11.9
2012					99	10.2
2013					78	8.0
2014					83	8.5
Type of injury						
Trauma					400	41.2
Attempted suicide					99	10.2
Others					471	48.6

Note. SD: standard deviation; Max.: maximum; Min: minimum.

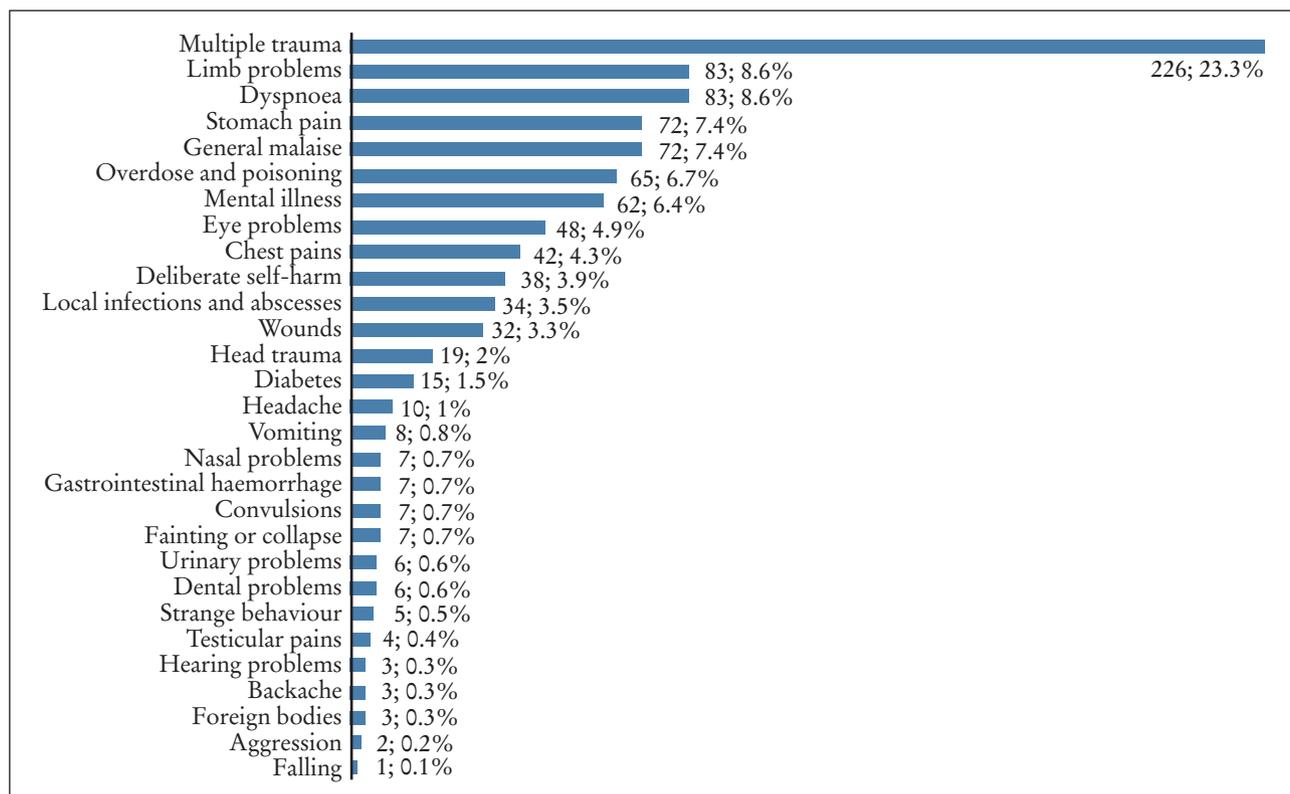


Figure 1. Reasons for visit to hospital A&E service according to MTS care diagrams (n; %).

in Switzerland, where the results show 851.5 visits a year¹⁸. At the same time, the article does not specify the number of centres that participated in the study, the mean population or the incidence rate to enable an objective comparison to be made.

The most recent reports on the Spanish prison system match the results of this study, showing a total of 3,882 hospitalisations in 2018, with the most common reasons being digestive and respiratory issues. The data does not match our findings, but this may be due to the absence of any details about the reasons for visiting the A&E department, where traumas that did not require hospitalisation may have been the main reason for the visit²³.

The figures for the inmates' country of origin clearly show that there are many more Spanish internees than those from other countries (78.4%). This data is similar to the results found in other studies carried out in Spain, where the percentage of Spanish inmates ranges from 64% to 90%^{17,25}.

The age of the participants (an average of 37.7 years) was very similar to the results in other studies, which ranged from 31 to 46 years^{17,18,26}. We also found that European inmates were 4.2 years older than the

Africans and 4.7 years older than the South American inmates. We found no results in the scientific literature that replicated these findings. It would therefore be interesting to introduce such variables in future research projects to establish what relationships might explain such findings.

One striking finding that contradicts the results of other studies^{27,28} is that that day of the week with fewest visits to A&E by a large margin was Sunday (80 visits), while visits during the rest of the week ranged from 121 (Saturdays) to 163 (Wednesdays). One explanation for this may be the system of prison visits and social realities of the inmates' family and friends, who as a rule use their non-working days to visit the inmate. If this is so, then the reason may well be that the inmate considers a family visit to be more beneficial than medical treatment and so puts off the hospital visit. Another factor that may have an effect on the result is the prison system itself, which may include weekend leaves for inmates.

As regards the reasons why inmates visit the A&E service (according to the MTS criteria), a striking figure is that 23.3% of the visits were made for multiple traumas, and were much more common than

the second and third causes (“limb problems” and “dyspnoea”: 8.5% of cases respectively). Our findings differ from the ones in the Swiss study¹⁸, where the most common reason was mental illness. At first sight, the Swiss results may seem very different from the ones obtained in this study. However, considering that many mental disorders are associated with a certain level of aggressiveness²⁹ and therefore a higher risk of lesions (traumas/limb problems), the findings may be assessed under the same prism. On the other hand, our findings match the ones in the American study, where trauma was the main reason for visiting A&E (16.8%)³⁰.

The type of lesion most commonly presented by participants was non-traumatic and non-self-harming injuries. One notable finding was the fact that self-harming caused so little medical attention in comparison to the ones mentioned above; given the high prevalence of mental illness in prisons, one would expect to see a larger number of suicide attempts or secondary injuries.

It is interesting to see that 50% of European inmates went to A&E for injuries that were not traumatic or related to attempted suicide, while most of the African, Asian and South American inmates did to for traumatic injuries. This result may be related to the fact that the European inmates were significantly older, leading to a greater prevalence of chronic diseases and the resulting complications. Furthermore, a clear relation was observed between inmates’ ages and the reason for visiting the emergency services, where trauma was the most common reason for the visit amongst the youngest inmates (34.2 years for lesions; 35.8 years for self-injury; and 41.2 years for injuries that were non-traumatic or related to attempted suicide).

One notable finding found in the days spent in hospital was the fact that the type of lesion that led to the longest stay was injuries that were non-traumatic or unrelated to attempted suicide. One explanation for this result may be the need for long-term hospital treatment for medical diseases or the worsening of chronic diseases, while less serious traumas can be treated with immobilisation or with outpatient surgery, thus leading to earlier hospital discharges.

Another finding was that inmates over 60 years of age required more time in hospital than the other age groups, as is the case with the general public³¹. This result is not surprising given the increase in morbidity caused by age and the complications associated with previous diseases.

The findings of our research show that trauma is the most prevalent problem requiring emergency

care amongst inmates, which may suggest a need to investigate high risk behaviours in the prisons where these accidents take place. In Spain a specific programme on the prevention of violent behaviours in prisons was recently implemented, and the results of the programme are not as yet available³². On the other hand, although the figures for suicide attempts and secondary injuries were not as high as expected, there is enough evidence to suggest that training in resilience for prisoners or the design of the facilities themselves can improve the mental health and wellbeing of internees and reduce levels of recidivism^{33,34}.

This study does suffer from a series of limitations that merit consideration. Firstly, the authors did not have access to the inmates’ prison or medical records, and so the reasons for imprisonment or the personal background relating to chronic diseases are unknown factors. Such data may be useful for assessing the specific needs of the population. Secondly, there may be a confounding bias, since all the confounding variables may not have been taken into account and analysed. A further limitation is that the results should not be extrapolated for the entire Spanish prison population, since only one prison was used as a reference.

This study highlights the need to continue to study the demand for emergency medical treatment by inmates, with a view to improving the quality of healthcare and ensure more efficient organisation and use of resources at the prisons and the A&E service of the referral centre.

Conflicts of interest

The authors declare that they have no conflicts of interest with respect to this article.

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