

Homogeneity of pharmacological prescription and control measures applied in cases of scabies detected amongst inmates in Catalonia*

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ABSTRACT

Objectives: To review the homogeneity of pharmacological prescription and control measures applied in cases of scabies in prisons in Catalonia.

Material and method: Observational, multicenter, and retrospective study. Cases of scabies from March 01, 2021 and March 01, 2022 were analyzed according to the International Alliance for the Control of Scabies (IACS) 2020 criteria: a) confirmed cases; b) clinically probable cases; and c) suspected cases.

Epidemiological, clinical, therapeutic and regimental control variables were collected. We checked whether the interventions were homogeneous in each site. The mean and standard deviation were used as continuous variables and percentages and confidence interval (95%) for discrete variables. The Chi-square test was used to determine statistical association.

Results: 269 cases were detected (21.2% confirmed, 50.2% clinically probable and 28.6% suspected). 61.3% were treated with permethrin, 18.6% with ivermectin and 20.1% with both. 27.1% of the cases were withdrawn.

There were no significant in-site differences in the study of contacts, isolation and treatment of clothing and belongings, but there were significant differences in the prescription of drugs ($P < 0.001$), duration of treatment ($P < 0.001$) and disinfection of the cell ($P < 0.001$).

Discussion: The number of detected cases is estimated to be high, and the majority (71.4%) confirmed or clinically probable. Control measures are homogeneous, except for cell disinfection, which was conventional in 59.1%. Pharmacological treatment and its duration varied between prisons. It would be advisable to establish a protocol to standardize control measures applied to new cases in the centers of Catalonia and subsequently evaluate their efficacy.

Key words: scabies; prisons; therapeutics; environmental health surveillance.

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INTRODUCTION

Scabies is an infestation by the mite *Sarcoptes scabiei var hominis*, an ectoparasite that causes characteristic skin lesions. It is mainly acquired from direct skin contact between people living together and sexual partners. Another secondary form of infection is via infested elements such as bedclothes or towels.

The main risk factors of the disease are poverty, destitution, underdevelopment, overcrowding, malnutrition, sexual promiscuity and poor hygienic conditions.

The incubation period ranges from two to six weeks, except in cases of reinfestation, in which itching takes place much more quickly, from one to four days after exposure. An affected person can infect others during the incubation period even when he or she has no symptoms.

The diagnosis is usually clinical and the typical skin lesions normally take the form of mite burrows, pimples and nodules, although other types of lesion may also appear.

The incidence of scabies in Spain is unknown, although the World Health Organisation (WHO) has emphasised the importance of knowing more about the magnitude of the disease¹.

An increased in the number of cases and outbreaks has been observed in recent years, especially in closed communities².

647 outbreaks were declared in Catalonia from 2015 to 2022, affecting 4,143 persons, while 206 outbreaks were reported in 2022 alone, the largest yearly number to date².

Spanish prisons administered by the Ministry of the Interior have also noted a major increase in the number of cases in recent years³, although the number of detected cases in the prison population have been proportionally lower than in Catalan prisons. However, there is some degree of ignorance as to whether the measures used to control and treat scabies are similar in the prisons within their territory, at least as far as Catalonia is concerned.

The aim of this study therefore is to review the homogeneity of the drug prescriptions and control measures applied by prison primary healthcare teams in Catalonia, to establish whether it is appropriate or not to draw up an updated protocol to standardise the control measures and the drug prescriptions applied in cases of scabies.

MATERIALS AND METHODS

We carried out an observational, multicentre and retrospective study at six prisons in Catalonia: Quatre Camins, Joves, Brians-1, Mas Enric, Puig de les Basses and Lledoners. A committee of three clinicians carried out a detailed review of the electronic clinical histories of all the cases diagnosed with scabies from 01/03/2021 to 01/03/2022, which were grouped together according to the consensus criteria of the IACS in 2020⁴: a) confirmed cases (diagnosed by direct observation); b) clinically probable cases, when there is a suspiciously characteristic symptomatology; and c) solely suspected cases.

Patients who had received prophylactic treatment and had been in close contact if there was no evidence of any active disease were excluded. The cases were selected and the database was designed and gathered by physicians of the Prison Infectious Diseases Group (GRUMIP) of the Catalanian Medical Institute Prison Health Programme.

An ad hoc database was designed that included: a) epidemiological variables: prison, age, sex and intravenous drug use; b) clinical variables: background of infection by SARS-CoV-2, infection by human immunodeficiency virus (HIV) and psychiatric pathologies; c) therapeutic variables: use of permethrin, ivermectin, both drugs simultaneously or alternately, number of doses prescribed and retreatment (yes/no); and d) other control measures: skin isolation and days of isolation, treatment of contacts and type of treatment used on clothing, belongings and cells.

The measures applied and the prescribed pharmacological treatment were analysed to see if they were standardised from one prison to another. To do so, we used the Statistical Package for the Social Sciences v.25 (SPSS v. 25). The mean and standard deviation were used for the continuous variables, and percentages and the confidence interval (95%) for the discrete variables. The Chi squared test was used to determine the statistical association between variables.

The study was carried out in accordance with international ethical guidelines (Helsinki Declaration and Oviedo Convention) and the recommendations on best clinical practices of the Spanish government framed within the principles of the Law on the Quality and Cohesion of the Spanish National Health System, 2003.

Confidentiality was guaranteed in accordance with Organic Law 3/2018, of 5 December, on Personal Data Protection and Guarantee of Digital Rights.

Given that the study was retrospective and the mean stay of inmates in Catalonia under prison sentence was 471.8 days, and 130.7 days for inmates under preventive custody, it was impossible to request informed consents, since most of the inmates treated for scabies were no longer in prison. However, the database was codified to ensure confidentiality. The observational study received support from the GRUMIP and was approved by the Catalanian Medical Institute Prison Health Programme.

RESULTS

13,090 inmates were held in Catalan prisons from 01/03/2021 to 01/03/2022, 6,953 of whom were incarcerated in the centres participating in the study: 1,399 in Quatre Camins, 414 in Joves, 1,900 in Brians-1, 1,226 en Mas Enric, 998 in Puig de les Basses and 1,016 in Lledoners. 269 (3,9%) cases of scabies were detected: 21.2% of which were catalogued as confirmed cases, while 50.2% were considered to be clinically probable and 28.6% as suspected cases. The distribution of cases varied in an interval between 8.3% at Puig de les Basses and 0.9% at Brians-1.

97.4% (n = 262) of the persons affected were men whose average age was 30.3 +/- 11.3 years (range: 18-67 years). The majority (n = 129; 58%) were under 30 years, and only 15 (6.8%) were over 50.

11.2% were intravenous drug users, 5.6% were HIV positive and 17.1% had a background of SARS-CoV-2 infection. Other descriptive characteristics of the population can be seen in Table 1.

61.3% of the patients were treated with permethrin, 18.6% with ivermectin and 20.1% with both drugs, either simultaneously or alternately. 27.1% of the diagnosed cases had their treatment withdrawn due to failure or reinfestation. None of the variables studied had a statistically significant association with retreatment.

Cohabiting cases were studied, isolation and cell disinfection measures were carried out, and clothing and other belongings were treated in 98.1%, 98.9% and 98.9% of case, respectively, with no significant differences between the prisons in the study. However, there were differences in the drug prescriptions ($p < 0.001$), the number of applications or duration of treatment with permethrin ($p < 0.001$) and cell disinfection, which was conventional in 59.1% and chemical in 40.9% of the cases analysed ($p < 0.001$).

Table 2 shows the inter-centre distribution and uniformity of the variables studied here, and the contrast between the hypotheses using the p value.

Table 1. Descriptive characteristics of the population

Variable	n	(%)
Age:		
18-30 years	129	58.9
31-40 years	43	19.6
41-60 years	44	20.1
>60 years	3	1.4
Sexo		
Male	212	96.8
Female	7	3.2
Prison		
Quatre Camins	77	28.6
Puig de les Basses	84	31.2
Mas Enric	51	18.9
Brians-1	18	6.7
Lledoners	6	2.3
Joves	33	12.3
IDU:		
Yes	30	11.2
HIV positive:		
Yes	15	5.6
Background of SARS-CoV-2 infection:		
Yes	46	17.1
Psychiatric pathology:		
Yes	70	26
Intellectual disability:		
Yes	13	5

Note. SARS-CoV-2: severe acute respiratory syndrome coronavirus 2; IDU: intravenous drug use; HIV: human immunodeficiency virus.

DISCUSSION

Scabies is a common disease amongst inmates. Joves prison in Barcelona recently reported 61 cases of scabies in one year, which the authors defined as “the largest case of scabies reported over such a short time scale in a European prison”⁵. However, such a high prevalence may not be unique to this prison, since other centres studied in this article presented similar prevalences and sizeable cases have been observed, although to a lesser extent than the one seen in the study. There has also been a major increase of cases in recent years at prisons administrated by the Ministry of the Interior³ and in foreign prisons^{6,7}.

Scabies is not distributed randomly, and for this reason it presents more frequently when there

Table 2. Distribution and uniformity of variables between centres.

Variable	Homogeneity (%)	Value <i>p</i>
Study of contacts	98.1	NS
Isolation and disinfection of cell	98.9	NS
Treatment of clothes and belongings	98.9	NS
Chemical disinfection	39.8	<0.001
Drug prescription:		
Permethrin	61.3	<0.001
Ivermectin	18.6	
Permethrin and ivermectin	20.1	
Duration of treatment (number of doses of permethrin):		
One	40.4	<0.001
Two	34.4	
Three	16.7	
More than three	8.5	

Note. NS: not significant.

are certain risk factors; it is also frequently detected amongst persons being incarcerated for the first time⁵.

In this study most of the cases analysed were found amongst young people (58% under 30 years), many of whom are marginalised immigrants who live in poor conditions of hygiene outside prison. It is also worth highlighting the fact that 5.6% of the cases of scabies presented infection with HIV; a proportion 51.3% higher than the global prevalence of HIV positive persons in Catalan prisons, which stands at 3.7%⁸.

On the other hand, one notable point was that non-pharmacological anti-scabies control measures were uniformly applied between centres and are adapted to the recommendations in European guides⁹, except for disinfection, which was chemical in only 40.9% of the cases. It should also be pointed out that disinfection work is often organised and carried out by the prison administration and does not often fall within the remit of the health services. It may therefore be necessary to improve the information available to prison administrations about disinfection so that the measured implemented comply with the specialist guides and to standardise them in all prisons. However, unlike control measures, the prescription, type and duration of drug therapy is highly variable, probably because there has been a disparity in recent years in experts' criteria, regimes and recommendations.

Although no differences were observed in terms of efficacy with topical permethrin and oral ivermectin^{9,10}, we agree with Bedoya *et al.*⁵ and with the recommendations of other experts¹¹⁻¹⁴ in that the drug of first choice for treating scabies in prisons should be oral ivermectin, for several reasons: a) it is highly effective, similar in this regard to permethrin; b) the regimen is a very comfortable one; c) it enables therapeutic compliance to be easily detected; and d) it is very useful in reducing the risk of epidemic outbreaks in closed or semi-closed settings such as prisons. It may also be advisable to review the scientific evidence about other therapeutic aspects such as the recommendation and regimen of retreatments and the suitability of combining ivermectin with permethrin in some situations¹⁵, given that there was little standardisation in these processes at the prisons we studied.

The limitations of this article stem from its observational and retrospective character and are centred around the cross-sectional design, which provides data at one single moment in time and so makes it impossible to determine a time sequence. Furthermore, the use of the software of the Primary Healthcare Clinic Station (or ECAP, an electronic clinical history used by prison primary healthcare teams in Catalonia) as a source of information always involves the risk of missing data. Although three of the authors acted as a committee to carry out a diagnostic classification of the detected cases, along with an exhaustive analysis of the clinical history of each case, the retroactive nature of the research and the likelihood of under-reporting may well lead to errors in classification. At the same time, the use of previously gathered information has some advantages, such as reducing the workload, which is a very important factor when working with large populations like the one in this study. This factor enabled us to explore the prevalence of scabies amongst inmates in a very short time scale, at a low cost and with easily reproducible results.

To sum up, our study has shown that the anti-scabies control measures applied in Catalanian prisons are uniform, except for the type of disinfection. However, there are major differences in the drug therapies applied, probably because the recommendations are not always standard or have not taken application in a closed setting into account.

For these reasons we feel that it would be recommendable for the GRUMIP to draw up a guide of clinical practice or protocol of measures that revises and brings together all the scientific evidence available on the prevention, control and treatment

of scabies, to optimise healthcare, standardise prescription and help prison health professionals to make appropriate preventive, clinical and therapeutic decisions.

CORRESPONDENCE

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BIBLIOGRAPHY

1. World Health Organization. Sarna. [Internet]. En: Who.int. WHO. 31 May 2023. Disponible en <https://www.who.int/es/news-room/fact-sheets/detail/scabies>
2. Izquierdo C, Martínez A, Mendioroz J, Romeu M. Informe de brots de sarna a Catalunya (2015-2022*). [Internet]. Subdirecció General de Vigilància i Resposta a Emergències, Agència de Salut Pública de Catalunya, Generalitat de Catalunya; 2022. [Actualització: 02/2023]. Disponible en: https://scientiasalut.gencat.cat/bitstream/handle/11351/8997/informe_brots_sarna_catalunya_2015_2022_2023.pdf?sequence=4&isAllowed=y.
3. Ministerio del Interior. Recomendaciones para la prevención y control de la Sarna en Instituciones Penitenciarias. Madrid: Secretaría General de Instituciones Penitenciarias; 2023.
4. Engelman D, Yoshizumi J, Hay RJ, Osti M, Micali G, Norton S, et al. The 2020 International Alliance for the Control of Scabies Consensus Criteria for the Diagnosis of Scabies. *Br J Dermatol*. 2020;183(5):808-20. <https://doi.org/10.1111/bjd.18943>
5. Bedoya del Campillo A, Lleopart N, Ghuman ChQR, Álvarez M, Montilla M, Martínez-Carpio PA. Optimización de un protocolo de intervención contra la sarna en comunidades cerradas a propósito de una serie de casos. *Rev Esp Sanid Penit*. 2021;23(1):39-45.
6. Mannocci A, Di Thiene D, Semynov L, Boccia A, La Torre G. A cross-sectional study on dermatological diseases among male prisoners in southern Lazio, Italy. *Int J Dermatol* 2014;53(5):586-92. <https://doi.org/10.1111/j.1365-4632.2012.05762.x>
7. Kouotou EA, Nansseu JRN, Sangare A, Mogueu Bogne LL, Sieleunou I, Adegbidi H, et al. Burden of human scabies in sub-Saharan African prisons: evidence from the west region of Cameroon. *Australas J Dermatol*. 2018;59(1):e6-10. Disponible en: <https://doi.org/10.1111/ajd.12540>
8. Departament de Justícia, Drets i Memòria. Descriptors estadístics serveis penitenciaris. [Internet]. Generalitat de Catalunya. Disponible en: https://www.gencat.cat/justicia/estadistiques_serveis_penitenciaris/12_pob.html
9. Salavastru CM, Chosidow, O, Bofia MJ, Janier M, Típlica GS. European guideline for the management of scabies. *J Eur Acad of Dermatol Venereol*. 2017;31(8):1248-53. <https://doi.org/10.1111/jdv.14351>
10. Rosumeck S, Nast A, Dressler C. Ivermectin and permethrin for treating scabies. *Cochrane Database Syst Rev*. 2018;4(4):CD012994. <https://doi.org/10.1002/14651858.CD012994>
11. Federal Bureau of Prisons. Scabies protocol: Clinical Guidance. [Internet]. Washington D. C.: Federal Bureau of Prisons (BOP); 2017. Disponible en: <https://www.bop.gov/resources/pdfs/scabies3.pdf>
12. Comité Internacional de la Cruz Roja. La santé en milieu carcéral: prise en charge des épidémies de gâle en prison. Ginebra: CICR; 2020.
13. Leppard B, Naburi AE. The use of ivermectin in controlling an outbreak of scabies in a prison. *Br J Dermatol*. 2000;143(3):520-3.
14. Ribero FA, Taciro E, Guerra MR, Eckley CA. Oral ivermectin for the treatment and prophylaxis of scabies in prison. *J Dermatol Treat*. 2005;16(3):138-41.
15. Specialist Pharmacy Service. How should crusted and other forms of difficult-to-treat scabies be managed? [Internet]. En: Wmic.wales.nhs.uk. Gwasanaeth Cyngor ar Feddyginiaethau Cymru (GCFC)/Welsh Medicines Advice Swervice (WMAS). 16 Nov 2016. Disponible en: <https://www.wmic.wales.nhs.uk/crusted-forms-difficult-treat-scabies-managed/>