Tuberculosis and Unhealthy Blocks in Early Twentieth Century Madrid: Ideological Construction of Demographic Reality?

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Topic and theoretical focus

Associated with urban growth and industrialisation, tuberculosis appears to be an "urban disease", affecting particularly the poorest districts[1]. Gerry Kearns (1988, 1993) attributes to tuberculosis the leading role in the "urban penalty" observed in England-Wales between 1851 and 1900. In Spain in the first third of the 20th century, the situation was similar (Pérez Moreda, Reher, Sanz Gimeno, 2015, especially chap. 5). Taking up, most often implicitly, the classic epidemiological model of resistance vs. exposure, historical research highlights two groups of explanatory factors. The first relates to poor nutritional conditions affecting immune capacity, and ultimately to poverty and socio-economic inequality. The second emphasises hygiene, housing conditions, overcrowding, and the density of contacts, which multiply the risk of contamination. Celia Miralles Buil (2014, 2017) insists, however, on the way historians reproduce in this respect the opposite visions that contemporaries had of the disease when they produced the documents we now use as sources[2].

Such division in the historical community is particularly evident in the work of Cottereau (1978) and Fijalkow (1997) on tuberculosis in Paris, especially in the late 19th and early 20th centuries. They observe the debate that pitted the proponents of a social medicine approach, emphasising the impact of poverty and inequalities between professions and neighbourhoods, against the advocates of transforming the unhealthy city into a healthy one, by renovating buildings and connecting them to urban networks, and eradicating slums. Cottereau and Fijalkow saw in this opposition of views the echo of an ideological conflict between those who wanted to fight tuberculosis by changing society, decreasing inequality, and others who could limit themselves to interventions on the urban fabric. The latter obtained the establishment of a huge file with a card for each building, enriched by a match with the causes of death provided by the civil registry. In the words of Fijalkow (1997), this sanitary record enabled a "territorialization of the risk" of tuberculosis, involving the identification of insalubrious blocks to "treat" them, which in the end was to rid the city of those who lived in these blocks. It was not the poverty of the latter that was emphasised, but rather their characteristics as a floating population of recent immigrants, which linked them to the "working classes, dangerous classes" (Chevalier, 1958). Many of the newcomers crammed into overcrowded boarding houses with

[1] Cf. the reviews by Cliff, Haggett and Smallman-Raynor, 1988, Pinol, 2003, 80-96, Mackenbach. 2020, 155-162, or the studies by Miralles Buil, 2017 and Pérez Moreda, Reher, Sanz Gimeno, 2015, on Spain, by Puranen, 1989, on Finland and Sweden, Hinde and Harris, 2019, on England-Wales, Vögele, 1998, on Germany and England, and Raftakis, 2025, on Greece.

[2] The work of Celia Miralles Buil is extremely useful because she has read and extensively analyzed the Spanish medical publications of the period we study. We also benefit from the work of Jorge Molero Mesa (1987) who – in the series *Textos Clásicos Españoles de la Salud Publica* -, reproduced 13 texts about etiology, prophylaxis and antituberculosis fight published between 1887 and 1920.

deplorable sanitary conditions (Fijalkow 1998)[3]. The controversy uncovered by Cottereau and Fijalkow was not unique to France or Paris; it was present in Spain at the same time[4]. In 1928, Madrid attempted to create a sanitary register similar to that of Paris, but we do not know whether it was actually implemented (del Carmen Palao Ibañez, s.d.).

There is also a distant and delayed echo in the Anglo-Saxon literature on declining mortality. The starting point is the famous thesis of Thomas McKeown (1976), who attributed a crucial role to tuberculosis in the secular progress of longevity. Among the causes of the decline in mortality, and tuberculosis in particular, he dismissed medical innovations and emphasised improvements in nutrition. This interpretation was criticised by Simon Szreter (1988), who emphasised the role of public hygiene and its ability to transform cities. Szreter (1988) and Colgrove (2002) further explained that McKeown's vision reflected his political commitment to prioritising the allocation of resources to social medicine over clinical medicine and “traditional” public health measures.

In a preceding work, we studied the impact of social and environmental (urban) variables on the risk of dying from pulmonary tuberculosis in early twentieth-century Madrid (Oris et al., 2025). In this communication, we will focus only on the insalubrious blocks, to see if they were a reality, or an ideological construction, and to what extent.

Data

This communication is devoted to the case of Madrid at the beginning of the 20th century. With just over 447,000 inhabitants in 1887, the population of the city of Madrid more than doubled over the following 50 years. In 1905, the life expectancy was only 28 years, particularly due to high infant and child mortality and the high prevalence of tuberculosis.

We benefit from the work of the statistical service of the Madrid City Council, which took an original decision: to compile its own statistics by transcribing the basic information from the original civil registers into large rectangular tables by year and for each of the city's ten districts. In these documents, kept in the municipal archives, each deceased person was assigned a registration number, consecutive up to the last death recorded that year in the district. With one line per deceased person, the columns indicate the first name and two surnames, age at the time of death (in years, or months or days for infants), the municipality and province of the deceased's place of birth, marital status and occupation (usually absent for deceased children), date of death, home address (house number, street, neighborhood), the cause of death, the cemetery where the deceased was buried, and any observations. The information contained in the observations is important because it was in this column that the names of the parents are mentioned when the deceased was a child, as well as the place of death if it did not occur at home (in a hospital, other health care facility, etc., generally using abbreviations). The structure of the variables in these municipal registers remained unchanged throughout our study period.

Causes of death have been coded using the ICD-10h typology. Originally developed as part of a collective project on port cities (Janssens and Devos, 2022), ICD-10h is being further expanded as part of the COST Action project "The Great Leap. Multidisciplinary approaches to health inequalities, 1800-2022" (Reid et al., 2024a and 2024b). The latter has been adopted in our data because it aims to

[3] Gerry Kearns also saw these boarding houses as one of the explanations for the excess male mortality from tuberculosis in the cities in England-Wales between 1851 and 1900 (Kearns 1993, 96).

[4] See Miralles Buil, 2017, 62-63, 162-168. And an excellent recent discussion of Manzano Goméz (2022) in his paper on *The cleanliness of otherness: epidemics, informal urbanization and urban degeneration in early twentieth-century Madrid.*

provide an analytical and comparative framework between countries over more than two centuries of rapid evolution in medical knowledge.

Currently, the database is exhaustive for the period 1905-1927 and covers 366,542 death records.

Methods

It is well-known that the knowledge and capacities to name tuberculosis have evolved over time, introducing uncertainty in the time-series (see Janssens and Devos, 2022, for a recent discussion). It is an advantage for us to consider short time windows, 13/15 years after Koch identified *mycobacterium tuberculosis,* which stabilised the disease aetiology and was rapidly diffused among the Spanish physicians. However, the issue of dissimulation of tuberculosis by the physicians remains true: both medical reasons and pressure from families (probably the wealthy ones) explained their reluctance to declare the disease as such. Indeed, they considered (pulmonary) tuberculosis as a failure to prevent, and bronchitis and pneumonia as, in most cases, the ultimate cause of death after a more or less long period of tuberculosis morbidity (Miralles Buil, 2014, 87-88). For these reasons, we will compare the deaths from pulmonary tuberculosis with those from respiratory diseases.

In Paris, the hotspots were identified by the local authorities through an absolute number of deaths by tuberculosis (5 or more at the same address) (Cottereau, 1978; Fijalkow, 1997, 1998). In the case of Madrid, we need to control the population living in each place (in 1905 Madrid, the median number of inhabitants per address was 52!), but in an exposure/contagion perspective, the absolute number is also important. We will use a probabilistic approach to estimate the impact of the number of deaths from tuberculosis on the probability of subsequent deaths from this disease in a given address. The Local Moran Index would indicate if spatial clusters emerged from hotspots.

Expected findings

We aim to check whether the influential discourses about the unhealthy blocks corresponded to the reality, to an ideological construction, or to a situation in between. We do not really anticipate the response. In previous research, based on a much more limited database (1905-1908), following the methodology used in Paris in the late 19th century, we searched the addresses where five deaths by tuberculosis or more were recorded. We found only one, with 39 deaths, which was a military barrack with 1291 residents. It means a tuberculosis mortality rate of 30‰, attesting that this peculiar place was at risk, also considering that most of those living there were young men, who were not the most vulnerable. Otherwise, the maximum was 4 deaths, at 4 scattered addresses, without any concentration appearing in the sieve of squares, streets, alleys, and dead ends, of the districts Hospital and Congreso.

Based on a logistic regression estimating the risk of dying from tuberculosis, we also calculated whether a death from tuberculosis in the household increased the probability of a subsequent death in that household in the next year. The effect was insignificant. But we worked here for only three years, surely too short.