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The plague of 1630 in Modena (Italy) through the study of parish registers

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Abstract. The purpose of this paper is to study the impact this disease had on the community in Modena during the epidemic in 1630 and highlight the real course of the disease that brought Modena and whole Europe to its knees in the 17th century. The investigation was carried out by transcribing and studying the parish certificates of death for the period 1625-1635. This study confirmed that the plague epidemic in Modena began as early as 1629, and then exploded in the most virulent form since the beginning of summer 1630 and reached its peak in August of the same year, when it caused about seven hundred victims.

Key words: plague, infectious diseases, paleopathology

Introduction

Infectious diseases have accompanied humans since ancient times and have marked their history, sometimes in a catastrophic way. In particular, everyone has heard of or read something about the plague. Epidemics of plague have had significant demographic, economic, and social consequences for humanities. It is mainly recalled as a cause of high mortality in past times: the "black death" in 1348 or the great plague of 1630 narrated by Alessandro Manzoni in the *Promessi Sposi*. However, unlike the Black Death, whose aetiology is still controversial, for the plague of 1630 several proteins belonging to bacteria from the *Yersiniaceae* family, including *Y. Pestis*, deposited on the sheets of the autoptic registers of the time, have been detected (1). Plague epidemics have been recorded in European historical documents since the 6th century (2) and its traces were dated back to Neolithic by molecular data (3). Although rare in contemporary society, the plague is considered a re-emerging infectious disease (4, 5), characterized by cyclic epidemic phases. In fact, even today, newspapers and articles discuss about the plague as an active disease among rodents and, occasionally, among human beings. Many historians, doctors, epidemiologists and writers have ventured into the study of this disease, in telling its story and the impact of successive epidemics. Through a multitude of papers, spanning several research fields, many information about the spread of this disease in past and modern times were recovered. In fact, historical data and their elaboration (6-10) together with molecular methods and results (3, 11-13) contributed to improve the knowledge of this disease. These information are useful both to provide measures of disease management and also to hypothesize time and models of spread in the future.

The purpose of this paper is to study the impact this disease had on the community in Modena during the epidemic in 1630 and highlight the real course of the disease that brought Modena and whole Europe to its knees in the 17th century. The analysis of this territory is particularly interesting, as for northern Italy, it is considered the worst plague since the Black Death.

The Spanish and French troops involved in the Mantua succession war were in fact carriers of diseases that infected large areas. None of the communities included in the area at the intersection of Lombardy, Veneto and Emilia-Romagna has been spared from the mortality crisis. This was also an area where communication routes and exchanges were very well developed. These could have been the most important causes for spreading the disease so quickly (14). The survey was conducted on the data contained in the certificates of death preserved by the parishes located within the walls of the town of Modena in 1630 (15).

Unfortunately, the lack of absolute and certain data of the number of population within the town walls for the year 1630 is a significant limitation to this investigation.

Materials and methods

In the 13th century the town of Modena was surrounded by walls and the access was ensured by several gates. The four main gates, situated in the most important points for the access of goods and people, gave the name to the four town boroughs. These boroughs were divided into *Cinquantine*, which constituted districts whose aim was to organise the life of the inhabitants, for military and fiscal purposes (16). At the beginning of the 17th century, *Cinquantine*, since they already corresponded to the extension of a parish, were reduced to the corresponding modern parishes: Cathedral, Santissima Trinità, S. Pietro, S. Paolo, S. Giacomo, S. Barnaba, S. Biagio, Pomposa, S. Michele, S. Agata, Madonna del Paradiso, Santa Margherita, S. Giacomo Battista, S. Vincenzo, S. Lorenzo, S. Giovanni Evangelista, S. Giorgio. Each parish had the assignment of drawing up the certificates of death and marking them on special registers. These registers are an important source of information since they date back from the end to the 16th century, to the Napoleonic era, when they were suppressed. The registers of the year 1630 of the parishes of S. Agostino, S. Biagio, S. Francesco, S. Pietro and the Cathedral are still preserved in their respective archives, while the registers of the other parishes are located in the Diocesan Historical Archive of Modena-Nonantola.

The investigation was carried out by transcribing and studying the certificates of death for the period 1625-1635. The five years preceding 1630 and the five years afterwards were taken into consideration in order to clearly present the trend of mortality within the town. The following data were taken into consideration for each digitized death certificate (17, 18):

- day of death;
- month of death;
- year of death;
- name of the deceased:
- surname of the deceased;
- name of the parents;
- parish;
- burial place;
- sex of the deceased;
- age of the deceased (months and days in case of infants);
- cause of death;
- place of death (rarely indicated);
- provenance (in case of foreigners);
- any priest's notes.

The certificates of death recorded in the investigation amount to a total of 7,367.

Results and discussion

The analysis of the mortality trend in town, between 1625 and 1635, offers us a glimpse into the historical period and how mortality began to increase towards the end of 1629 and reached its peak in 1630 (Fig. 1). During the first five years examined, mortality accounted for around 500 deaths a year (in 1628 it decreased to 400) while in 1630 the number of deaths exceeded 2600. The very few deaths in 1631 are attributable to the fact that the plague brought to death before time individuals of poor health, who probably would have died of other causes if the epidemic had not occurred. It wasn't until 1635 that mortality surpassed 500 annual deaths again. The registers show a smallpox epidemic in the last year, which struck the youngest age group. The number of deaths of the single parishes (Tab. 1) shows that mortality reached its culmination in 1630 (Fig. 2), an increase as early as 1629, and then collapsed in 1631. The differences in the number of

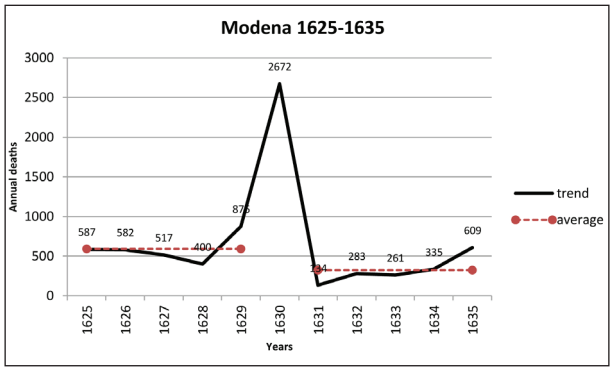

Figure 1. General trend of death (not just plague). Average 1625-1629 is 592,4 death/year, average 1631-1635 is 324,4 death/year, with decline of 45,2% after 1630.

deaths among the different parishes is due to the different size of the territory and the different number of inhabitants. The parish of the Cathedral was certainly one of the most numerous and important, therefore it is the one with the highest number of victims in 1630.

Each parish hardly reached 50 deaths in 1631, but each of them had a slight increase towards the middle of 1634. The districts of the city within the walls were not affected simultaneously by the infection, but there is no way to establish exactly which district was struck first. The number of deaths began to increase in April, but only slightly and established itself in May in the district of the Cathedral, in S. Giorgio, in the Madonna del Paradiso, at Pomposa and in S. Pietro, and then increased significantly in all districts in June (19).

Giovanni Serra in his book *La peste nell'anno 1630 nel Ducato di Modena* (20) (The plague in the year 1630 in the Duchy of Modena), reports a total of 892 deaths within the walls of Modena in 1629. He also informs us that the total number of deaths that were declared in the Health lists and in the daily reports sent to the Duke's court, amounts to 4.057, of which, however, 3.623 died in the houses of Modena, 217 in the *Lazarettos* and 217 deceased belonged to the Jewish

Table 1. Number of deaths by year on individual parishes.

	NUMBERS OF DEATHS BY PARISH																
YEARS	S. Agostino	S. Barnaba	S. Biagio	S. Domenico	Cathedral	S. Francesco	S. Giacomo	S. Giovanni Battista	S. Giovanni Evangelista	S. Giuseppe	S. Lorenzo	S. Margherita	S. Maria della Pomposa	S. Maria della Trinità	S. Paolo	S. Pietro	S. Vincenzo
1625	11	61	1	26	112	33	48	3	28	48	27	17	72	28	25	34	13
1626	8	35	4	23	117	33	39	3	37	35	19	20	84	45	21	48	11
1627	17	49	1	24	80	47	41	6	40	19	14	17	52	36	13	38	23
1628	17	34	9	24	85	33	34	7	39	22	11	11	-	28	8	30	8
1629	36	70	68	44	170	74	49	13	60	6	20	29	26	32	61	90	28
1630	119	152	152	304	388	323	183	34	56	165	18	109	222	94	161	154	38
1631	3	-	-	10	31	14	12	2	5	16	1	-	-	10	13	11	6
1632	14	23	9	12	31	16	14	8	12	29	4	10	28	13	21	27	12
1633	9	16	18	11	30	21	14	3	8	20	8	4	29	19	18	24	9
1634	10	22	26	14	28	28	22	3	13	20	7	4	50	18	12	41	17
1635	22	34	30	26	77	43	43	8	26	46	15	-	86	39	38	70	6

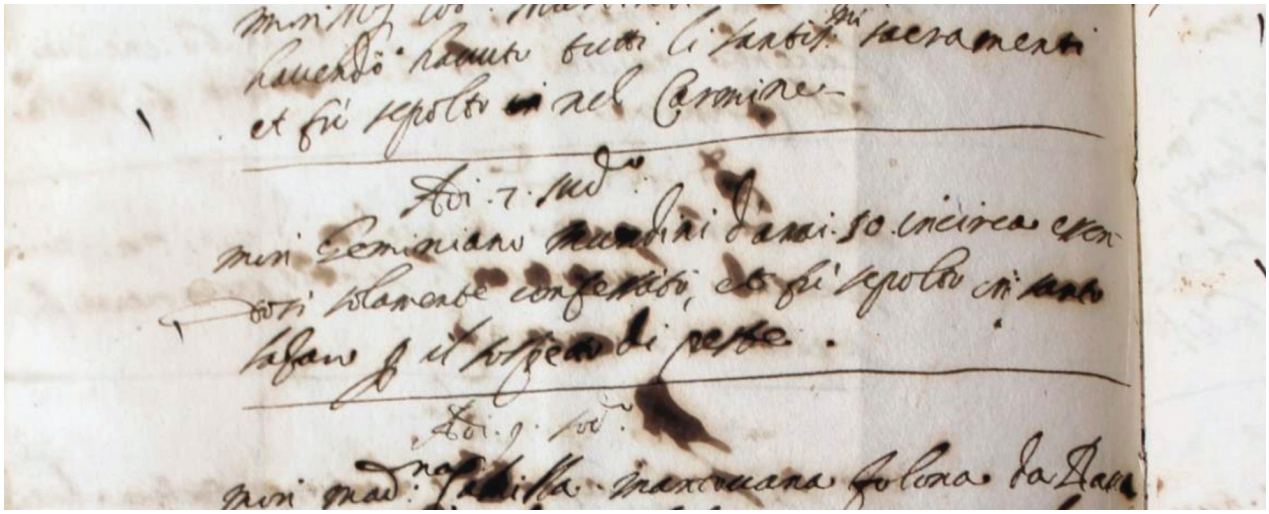

Figure 2. Death registration from the Parish of San Giovanni Evangelista, dated back to 7 July 1630, in which we read that Geminiano Mondini, aged 10, died for suspicion of plague (foto Diletta Biagini).

community. As for the mortality of the years preceding the infection, mortality rates within the town walls were obtained based on the data provided by Beloch (21), and therefore on a population of 20.000 inhabitants (Tab. 2). The mortality percentages show how the situation worsened in 1630 reaching 20,28%, if the data collected from the registers kept in the Diocesan Historical Archive of Modena-Nonantola are taken into account, and 40,57%, if instead we use Serra's data. This last one, suggested a much greater impact of the disease, since he stimated the number of individuals within the town as not higher than 10.000 (this is probably the closest to reality). It is clear that the large-scale epidemic suffered by Italy were characterized by very high mortality rates compared with those affecting contemporary Europe. If in fact, the 17th century English epidemic plague had mortality rates of 100-120‰, in Italy the most common was 300-400‰, As highlighted also in the case of Modena with the value of 407‰. The mortality rate was 330‰ in Venice, 443‰ in Piacenza, 615‰ in Verona (1629-1630); 490‰ in Genoa and 500‰ in Naples (1656-1657) (22-24). In the analysis of the registers the number of deaths in 1629 is 898, while 2.704 in 1630. During the summer months of 1630, when mortality reached its maximum extent, the parish priests, in many cases, stopped compiling the registers. The months in which the disease had the most severe impact were left as whole blank pages. In some places, the priest himself was a victim of the disease, consequently the compilation of the registers was postponed until the arrival of the new priest, who unfortunately was often unable to trace the data of the previous deceased. There are several registers featuring this void in the documentation, such as the parish of the Cathedral, S. Agostino and S. Pietro.

Table 2. Mortality rates within the city walls, calculated on a population of 20,000 and 10,000 inhabitants

Year	N. deaths	Percentage (population 20.000)	Percentage (population 10.000)
1625	590	2,9 %	5,9 %
1626	585	2,9 %	5,8 %
1627	526	2,6 %	5,2 %
1628	400	2 %	4 %
1629	898	4,4 %	8,9 %
1630	2704	13,5 %	27 %
1631	135	0,6 %	1,3 %
1632	291	1,4 %	2,9 %
1633	264	1,3 %	2,6 %
1634	336	1,6 %	3,3 %
1635	616	3 %	6,1 %

The collapse of the population was catastrophic. The seasonality of death in 1629 (Fig. 3) shows that this year is characterized by a very low mortality,

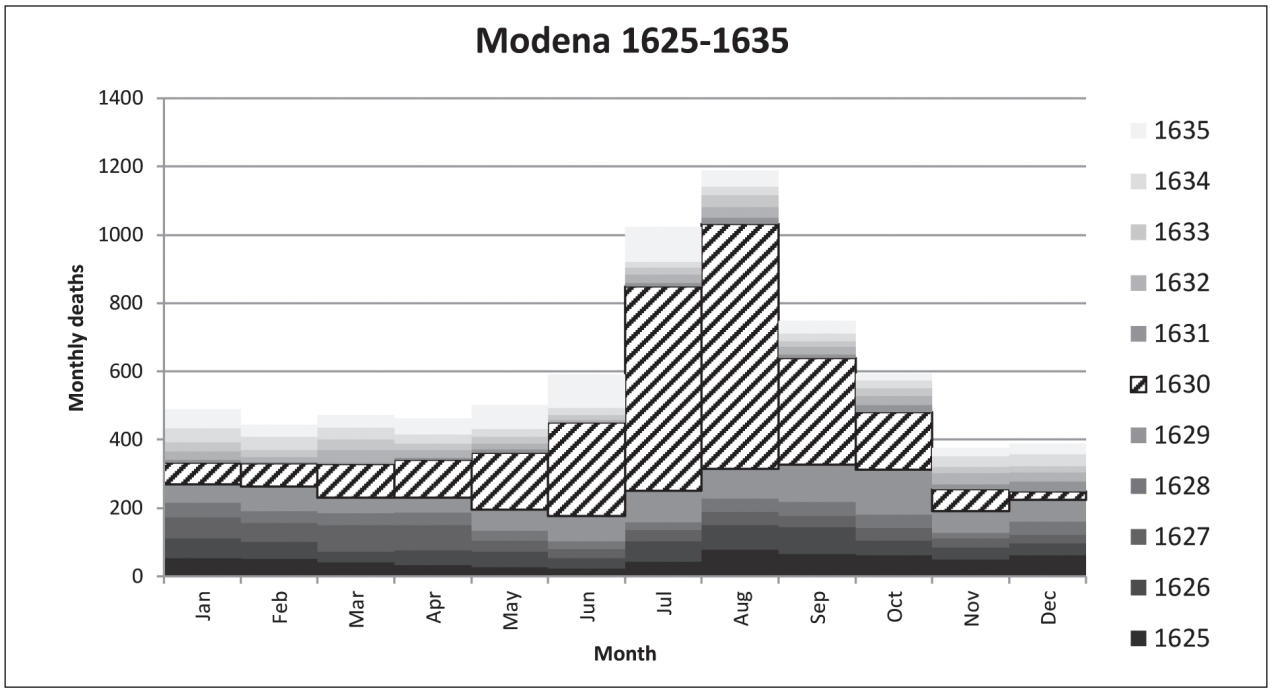

Figure 3. Monthly deaths over the period 1625-1635, in 1630 we observe an abnormal increase of mortality from May to October.

which is never higher than 100 deaths a month, except for the months of September and October. A slight increase is found starting from July to October, and then a decrease again in November and December. Indeed, although the contagion was already approaching, the city of Modena still enjoyed a certain tranquillity. Only towards November the Duke ordered the Magistrates of Gualtieri and Brescello to request the "*fedi di sanità*" of travelers. These documents, issued by doctors or health care professionals, also reported the physical characteristics of their owners in addition to their state of health. However, no further action was taken either in the city or in province. In fact, although it was known that the contagion spread to Brescia, Milan, Parma and Mantua, life in Modena seemed to flow quietly, so much so that at the end of May 1630 the borders were still open (25,26). It is clear that mortality in 1630, compared to the previous year, had been increasing since March, and then reached nearly 300 deaths in June, a time indicated by Serra as the beginning of the epidemic in town. Only from this month the court and the authorities began to admit the possibility of contagion even in the provinces of the Duchy. On day 13 of that month, Francesco I ordered the Magistrate of Health, Giacomo Spaccini, to organize "one or two lazzaretti" towards San Lazzaro. It was also arranged the closure with guards and ranchons of the borders in the area of San Martino, although the passes of Finale, Nonantola, San Felice, Montefiorino and Rubiera still remained open (27). Ten days later, contacts with Milan, Lecco, Bergamo, Pavia, Brescia, Vercelli, Toulouse, Guastalla were prohibited. Only from July 1630 very strict measures were finally adopted: capital punishment and confiscation of property for offenders against the prohibition of trade and circulation with such forbidden cities; ban on keeping animals within the walls of Modena; total ban on the movement of men and animals; prohibition of holding fairs and markets; ban on leaving home for the sick, for women and children; obligation to clean up roads and canals to remedy poor hygiene conditions; obligation to mark the homes of the sick with red crosses (28,29).

The Duke also claimed to be informed daily about deaths from plague in the city; the Magistrates of Health had to write a daily list, which contained the names of the dead and the total divided by non-Jews and Jews (Fig. 4). But now it was too late to try to stem the fierce epidemic. The highest peaks took

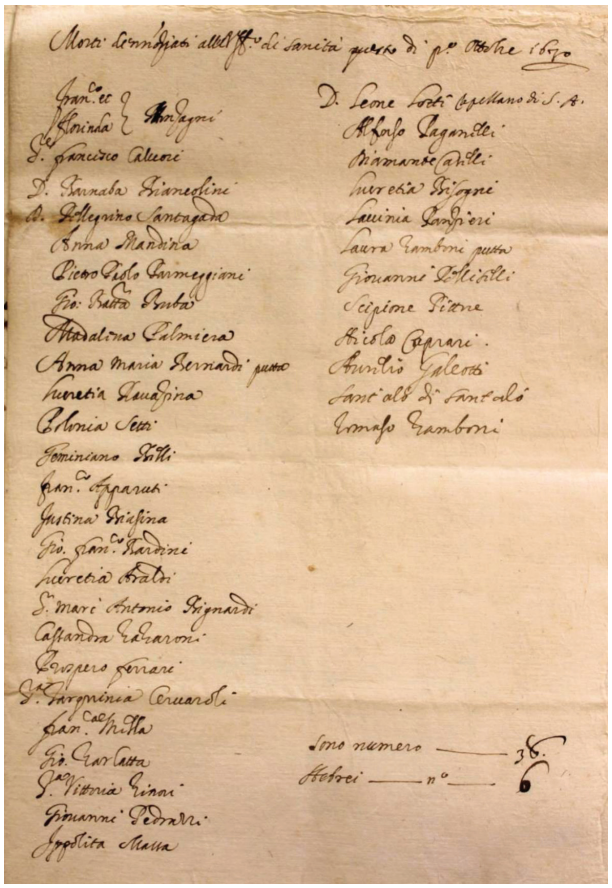

Figure 4. Daily list written by the Magistrates of Health, the names of the dead and the total deaths on October 1, 1630 are reported, divided between non-Jews and Jews. (foto Diletta Biagini)

place in July, with 599 deaths, and in August, with 717 deaths (Fig. 5). The number of victims remained rather high also in September, with 312 deaths, but also showed a slight decrease in the infection, which ended in November and December. During 1631, 135 people died over the year. This is because most of the population had been killed by the plague. Mortality in 1629 seems to increase especially in May and June, but then a rather constant trend is maintained. Mortality in 1630 is rather high compared to the previous years. The increase begins in May, and grows considerably in the summer months, until it collapses in November (Tab. 3).

As regards the age of the deceased, the population between 1 and 60 years of age was affected in almost equal measure during the plague epidemic, while almost all the parishes showed a lower number of deaths in the age range 0-1 years (14) (Fig. 6 and Tab. 4). Nevertheless, the age of the deceased is not recorded in all registers, so the picture presented here cannot be considered as completely exhaustive. During the plague of 1630 in Modena there were three hospitals for the plague patiens: one in S. Lazzaro, another in the Sgarzerie, and the third in the Stimmate district, all three financed for the conservators of the city. The bourgeoisie and nobility, with its own house equipped with separate rooms for the sick and healthy, could stay in their homes and be treated locally by doctors. Great surveillance was also applied to foodstuffs to be distributed to citizens: butchers had to sell healthy meat; the grain, flour, and bread suppliers were continuously checked directly by deputies appointed by the magistrates. Even the apothecaries remained under strict control of sanitary ware appointed by the conservators and had to be supplied with medicines in sufficient quantity for the needs. Given the tragic conditions of the population, the Duke of Modena had facilitated

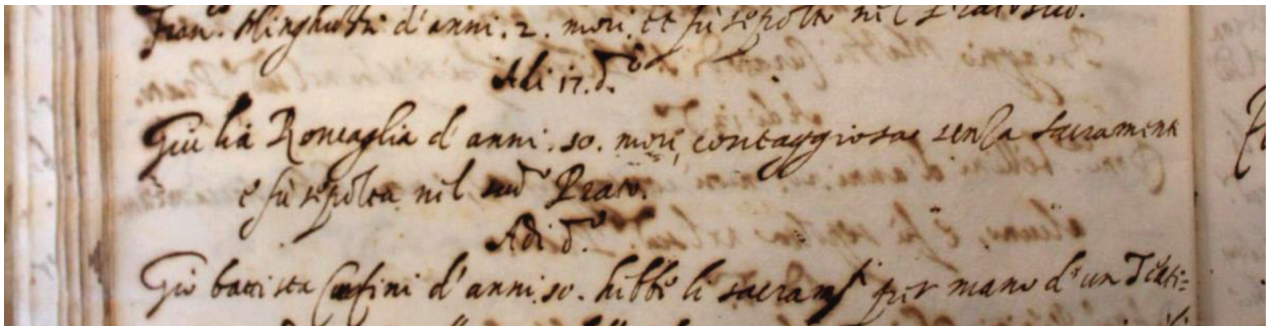

Figure 5. Death registration from the Parish of San Pietro, dated back to 17 August 1630, in which we read that Giulia Roncaglia, aged 10, died contagiously without sacraments (foto Diletta Biagini).

Table 3. Seasonality of death divided by the different years. The inverted winter/summer trend is evident. In the years before 1630 there are more deaths in winter, related to bronchopulmonary diseases, compared to summer. In 1630/31 this trend is reversed due to the plague. The same phenomenon of inversion recurs in 1635, year in which the city of Modena was struck by a smallpox epidemic.

	YEARS										
	1625	**1626**	**1627**	**1628**	**1629**	**1630**	**1631**	**1632**	**1633**	**1634**	**1635**
January	54	58	60	43	55	63	8	24	27	41	56
February	52	49	55	36	71	68	4	14	22	38	35
March	42	30	79	34	45	98	5	37	30	36	37
April	33	43	74	37	43	112	6	22	18	27	47
May	27	45	33	28	62	167	11	16	21	22	69
June	23	31	26	22	75	274	-	8	14	20	100
July	43	60	32	24	91	599	10	24	22	17	102
August	78	73	39	38	87	717	18	31	36	23	48
September	66	79	31	42	109	312	10	24	16	22	37
October	62	44	37	38	131	170	19	27	22	23	21
November	49	35	27	17	64	63	14	34	18	31	25
December	61	36	25	39	64	23	29	28	17	35	31

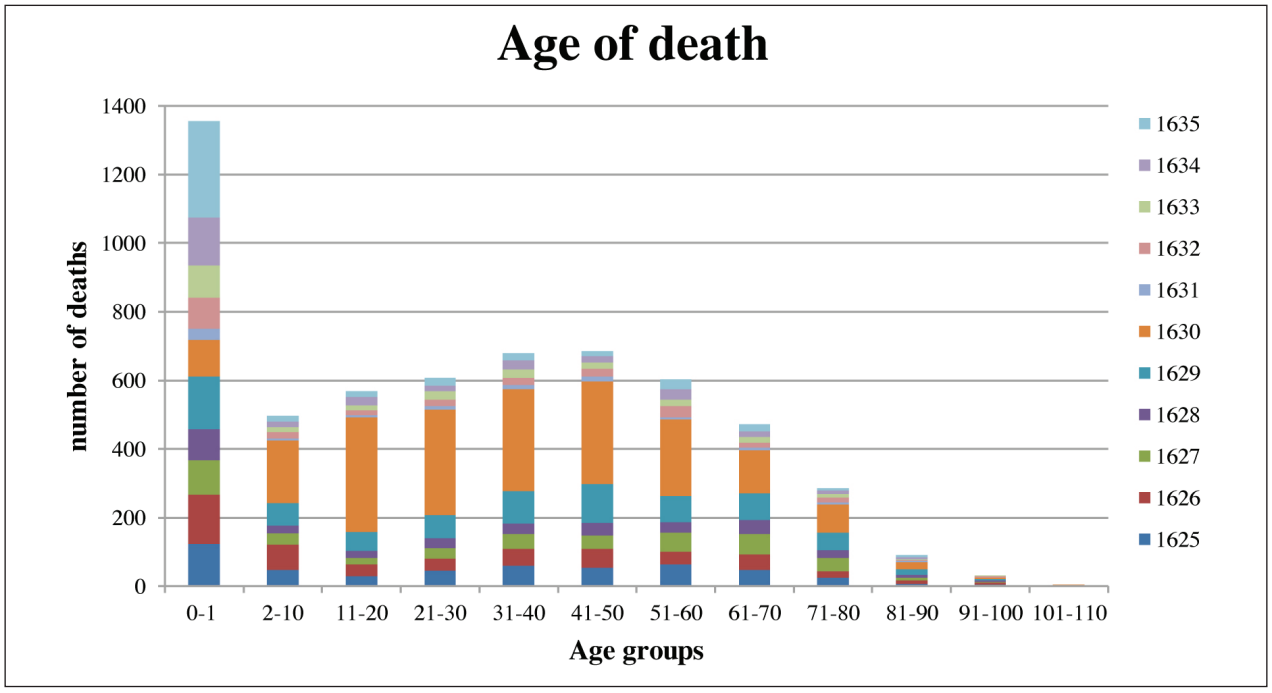

Figure 6. Representation of the number of deaths broken down by the different age groups of death in the years 1625-1635.

the way to make a will during the contagion: a notary with three witnesses, received the will of the testator, it was enough that the latter shouted it from the window or door. Outside the city, in the villas of the district, where a notary was not present, it was sufficient for the testator to declare his will to the pastor, or to the

Table 4. Age of death by age classes.

		NUMBERS OF DEATHS BY YEARS										
		1625	**1626**	**1627**	**1628**	**1629**	**1630**	**1631**	**1632**	**1633**	**1634**	**1635**
AGE CLASSES	**0-1**	123	144	101	90	154	107	31	90	96	139	281
	2-10	48	74	33	22	66	182	5	19	14	17	17
	11-20	28	36	18	20	57	333	6	14	15	24	17
	21-30	46	34	32	27	68	309	9	18	25	16	24
	31-40	60	49	43	31	94	298	11	21	24	28	20
	41-50	54	56	38	37	113	300	13	22	19	18	15
	51-60	63	37	56	31	75	225	6	32	18	32	28
	61-70	47	46	60	41	77	125	8	15	15	18	20
	71-80	24	20	38	22	52	82	7	13	10	12	6
	81-90	6	11	8	8	16	22	3	2	3	5	7
	91-100	5	5	3	4	3	4	1	4	1	-	-
	101-110	1	-	1	1	-	2	-	-	-	-	-

chaplain, in the presence of two witnesses. Historical sources make reference in particular to two cemeteries outside the walls, where the infected corpses were brought during the infection: the cemetery of S. Lazzaro (which was the cemetery of the Lazzaretto), outside Bologna gate, and the so-called "Prato novo", outside S. Agostino gate. Unfortunately, parish registers often simply report "buried outside", without specifying the place of burial. In addition to these two places, Roversella or Roverella (or Poverella?) and Verdeda are recorded in the sources. No correlation was identified between the parishes the deceased citizens belonged to and the places where they were buried. In fact, the parishes that buried their deceased outside Porta S. Agostino (one of the entrances to the town) seem to be as follows: S. Agostino, Cathedral, S. Domenico, S. Francesco, S. Giacomo, S. Giuseppe, S. Pietro and S. Vincenzo, while outside Bologna those of: S. Domenico, S. Giacomo, S. Giuseppe, S. Maria della Pomposa, S. Maria della Trinità, S. Pietro. The cemetery of Roversella was used only by two parishes: Cathedral and S. Francesco. The parishes not present in this list just bear the indication of the burial within the town walls, without specifying the place. Beloch (17) gives us some interesting facts about the plague-affected population in other Italian cities. In Lombardy more than a third of the population (38%) was struck by the plague, the city of Milan reached 40% of deaths, while 60% was even reached in Cremona. Major losses were suffered by Mantua, which in addition to the plague also underwent war and looting on the part of Lanzichenecchi. Parma lost about half of its population.

Conclusions

The analysis of the parish registers has confirmed that the plague epidemic in Modena began as early as 1629, and then exploded in the most virulent form since the beginning of summer 1630 and reached its peak in August of the same year, when it caused about seven hundred victims. Security measures by the authorities, were perhaps taken late, when the disease was already in the city. The town was massively affected, like the other cities of Northern Italy with very similar percentages. The epidemic in Modena lasted a slightly over one year, in fact already starting from November 1630, the mortality returns to levels that are even lower than those of the pre-epidemic time. This low number of deaths from 1631 to 1634 is probably due to the fact that, under normal conditions, individuals destined to die in these years had died early during the epidemic. Starting from 1635 the data foreshadowed a mortality increase due to small-

pox, which can be deduced from the certificates kept in the parish archives. Smallpox particularly affected the youngest age group, accounting for a total of 420 victims between 0 and 10 of age. The district or parish that recorded the first cases of the plague, could not be identified also due to the limitations of the available documentation, nor did any clear mortality differences emerge between the different districts of the town. Based on our study data, it was estimated approximately that the plague epidemic in Modena caused the death of over a third of the population. This figure, compared with the values reported by Beloch, is not dissimilar or slightly lower than that recorded in other cities in Northern Italy affected by the disease such as Milan and Piacenza in which mortality reached 40%.

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ACAMo. Parrocchie soppresse nel XVIII secolo, S. Giovanni Battista, Morti
ACAMo. Parrocchie soppresse nel XVIII secolo, S. Giovanni Evangelista, Morti
ACAMo. Parrocchie soppresse nel XVIII secolo, S. Lorenzo, Morti
ACAMo. Parrocchie soppresse nel XVIII secolo, S. Margherita, Morti
ACAMo. Parrocchie soppresse nel XVIII secolo, S. Maria della Pomposa, Morti
ACAMo. Parrocchie soppresse nel XVIII secolo, S. Vincenzo, Morti
ACAMo. Parrocchie soppresse nel XVIII secolo, S. Maria della Trinità, Morti
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ACAMo. Parrocchie soppresse nel XVIII secolo, S. Domenico, XVIII. 600 Morti 1573-1696
ACAMo. Confraternita Sacre Stigmate, n. 35 (1627-1630)
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ASCMo. Magistrato di Sanità, fil. 9, fil. 10, fil. 11
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