

Dante and the medical science

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Abstract

La Divina Commedia (The Divine Comedy) is plenty of references related to the field of medicine and the author, Dante Alighieri, demonstrates a certain knowledge of the subject. So, where did the writer acquire these skills? Was he perhaps a doctor?

There are specific biographical elements that highlight Dante's relationship with medical environments of the time. Alighieri was enrolled in the Guild of Physicians and Apothecaries. It also seems that he had attended the lessons of Taddeo Alderotti, at the University of Bologna, and probably he met Pietro d'Abano in Padova. Alighieri loved Beatrice Portinari, whose father founded the hospital of Santa Maria Nuova in Firenze. Beatrice's nurse, then, was Monna Tessa, the first oblate, who consecrated her life to the caring of the sick.

In *The Divine Comedy* Alighieri quotes classical authors and contemporary physicians; he describes pain and disease; he demonstrates knowledge of the anatomy of the human body; he refers to some of the hospitals of the time.

Dante's works, therefore, reveal a knowledge of medical authors and an ability to describe and discuss medical matters that a layman could hardly have possessed: Alighieri was not a "medical man" but he was certainly familiar with medicine.

Keywords: Dante, medicine, *The Divine Comedy*

In *The Divine Comedy*, there are many references to the medical and surgical art: the description of the bodies torn by pain, of clinical conditions described in a meticulous manner, and sometimes the use of technical terms recurring in the medical treatises of the time can lead to think that Dante had a certain knowledge of the subject. Was Dante, therefore, a doctor? The question was advanced in the columns of the *British Medical Journal* in 1910 and the subject has been addressed several times over the years, especially in order to understand how the writer had acquired these skills.

Giovanni Battista Morgagni was among the first to note the clinical implications of Dante's poem. But many others dealt with the subject: Michelangelo Asson, Salvatore de Renzi, Cesare Lombroso in the Nineteenth century; Arturo Castiglioni, Liborio Giuffrè, Loris Premuda in the Twentieth century.

Important contributions have also been made by Patrizia Bertini Malgarini, Romano Pasi and, in more recent years, by Donatella

Lippi who has systematically addressed the issue: in 2009-2010 she published *La Divina commedia. Con note storiche-mediche* (in three volumes), and just this year *Dante tra Ippocrate e Galieno. Il lessico della medicina nella Commedia*, to which we will refer in detail here. Considering, therefore, the vast existing bibliography, this short essay - which takes its cue from an interview with Donatella Lippi (Panetto 2021) - does not intend to deepen aspects already meticulously (and brilliantly) treated, but rather to offer a quick overview of the subject.

There are particular biographical elements and formative circumstances that highlight Dante's relationship with medical environments of the time. Alighieri was enrolled in the Guild of Physicians and Apothecaries: starting with the legal orders of Giano della Bella, in fact, enrollment in a guild of arts and crafts was necessary in order to participate in public life. Raffaele Ciasca at the beginning of the last century observed: "Alighieri possessed the highest qualifications to enroll in

the Guild of Physicians and Apothecaries. He had a philosophical background, a culture of medicine and he knew the whole of liberal arts which at that time were the foundation of both philosophy and medicine" (Ciasca 1931, 71).

In addition, as reported in the *British Medical Journal*, "it is not improbable that his enrollment entailed an examination which was not perfunctory and proof of the practice of his profession which was not merely formal". Precisely because he belonged to this guild, therefore, we often see Dante portrayed with the *lucco*, a long red robe that in Florence, according to the suntuary laws, was the dress that only doctors could wear.

It also seems that Dante had attended the lessons of Taddeo Alderotti, professor of medicine at the University of Bologna in the Thirteenth century. According to Raffaele Alberto Bernabeo, "the desire for knowledge and the same sense of doubt" of Dante led the poet "to follow in Bologna the lessons of the countryman Taddeo Alderotti". Anna Cerbo adds that in this city Dante certainly followed the lessons of philosophy and medicine, as "he considered all the sciences of high value and all necessary to know the universal order that theology then makes understand in its providential meaning" (Fughelli and Maraldi 2012, 3-4).

Students of Alderotti were also Fiduccio de' Milotti, who was Dante's personal physician in Ravenna (Lippi 2021), and Mondino de' Liuzzi, who wrote the *Anothomia* in 1316, a text used in many European universities until the middle of the Sixteenth century. Patrizia Fughelli and Elisa Maraldi dwell extensively on the possible relationship between the latter and the author of *The Divine Comedy* (Fughelli and Maraldi 2012). Mondino was a few years younger than Dante and this would exclude that they were fellow students. Nevertheless, there may have been a possible friendship between the two men or an indirect knowledge of Mondino's anatomical studies on the part of the poet.

Alighieri could have been inspired by these environments and these acquaintances. Taddeo Alderotti, for example, is mentioned in *Paradiso* (XII, 82-87), when the life of San Domenico is narrated, and in the *Convivio* he is listed as the translator of a compendium of

Aristotle's *Ethics*. Philosophy still very much permeates medicine and philosophical principles are associated with the science of Galen and Hippocrates (Fughelli and Maraldi 2012).

The Divine Comedy, moreover, "in the numerous medical and anatomical notations it contains, in order to render the punishments of the damned in the Inferno very vivid, can be thought debtor of the work of Mondino. It is true that the *Anothomia* is written only in 1316, when the first canticle of Dante's poem is already finished [...], but this does not imply Dante's lack of knowledge of the theories and medical practices endorsed by Mondino" (Fughelli and Maraldi 2012, 4).

Dante attended Bologna, but he was also in Verona, where he knew various physicians, including Antonio Pelacani, doctor of Matteo I Visconti. It is also believed that Alighieri attended Padova and here he probably met Pietro d'Abano (Lippi 2021), a physician, philosopher, astronomer and astrologer who taught at the University of Padova at the beginning of the Fourteenth century (Zampieri 2019, Piaia 2020). Padova, in fact, was an important university city, populated by students from all over Europe. It was one of the most lively cultural centers in Italy and, together with Bologna, the greatest center of Aristotelian studies in our country. The historian Alessandro Barbero writes: "The great Pietro d'Abano taught there and Dante may have found some of the books he used in the *Convivio* and the *De vulgari eloquentia*. And moving from Padova, he may have acquired that first-hand knowledge of places and dialects of Veneto, [...] which surfaces so frequently in his works" (Barbero 2020, 221).

Moreover, Alighieri loved Beatrice Portinari, whose father Folco in 1288 founded the hospital of Santa Maria Nuova in Florence, still active today as a healthcare center. Beatrice's nurse, then, was Monna Tessa, the first oblate, who consecrated her life to the caring of the sick.

There are, therefore, in Dante's biography a series of conjunctions that reveal a certain familiarity with the medical environment of the time and its protagonists. But the poem itself tells us about medicine. In *The Divine Comedy*, indeed, there are numerous references to medicine and anatomy. (Lippi 2009-10, Lippi 2021).

Dante shows that he knows the great classical authors. In the fourth canto of the *Inferno* (vv. 139-144), in addition to Dioscorides (first century AD), the poet quotes Galen (129-200 circa), Avicenna (980-1037), Averroes (1126-1198) and Hippocrates of Cos (460 BC - 377 BC). The latter, in particular, is mentioned in several places in *The Divine Comedy*: references to the "supreme Hippocrates" ("sommo Ippocrate") are found in the *Purgatorio* (XXIX, 136-138), but also in *Paradiso*, where the poet alludes to his *Aphorisms* (XI, 4-9) and the *Oath* (V, 64).

According to the historian of medicine Loris Premuda, Dante had probably learned the thought of Hippocrates from the Latin versions of Gherardo da Cremona and, indirectly, through the *Regimen Sanitatis Salernitanum*. As for Galen, however, the poet ignored the Latin version from the Greek of *De usu partium* of Niccolò da Reggio, but certainly knew the *Articella* (Premuda 1965). Even Aristotle, "the master of knowledge" (*Inferno* IV, 131), is an author well known to Dante. According to Premuda, the thought of the philosopher came to Alighieri most likely through the Greek versions of Willem van Moerbeke.

Among the contemporary physicians, the author of the *Divine Comedy* remembers – in addition to Taddeo Alderotti – Pietro Hispano (*Paradiso* XII, 134), professor of medicine in Siena between 1246 and 1249: after embracing a career in the church, Hispano in 1276 ascended to the papal throne with the name of Giovanni XXI.

Dante quotes numerous figures of doctors, both ancient and contemporary, but also refers to the hospital situation of the time. In cantos XXIX and XXX of the *Inferno* he describes the punishments to which falsifiers are subjected, in the tenth chasm (*bolgia*) of the eighth circle: the damned are divided into four groups (alchemist, forgers, impersonators, liars) and are tormented by repugnant diseases. By the Dante poetic justice (*legge del contrappasso*), those who in life altered reality now see their bodies disfigured. Alighieri compares the terrible odor of the bodies of the damned to that of the sick in the Val di Chiana, Maremma and Sardinia, if they had been gathered in one place (*Inf.* XXIX, 46-51). The poet alludes, in this way, to a situation of profound degradation and to structures

that may not have been able to adequately accommodate the sick (Lippi 2021).

Fig. 1. Dante and Virgil watching heretics in hell ripping their bodies apart as punishment for schism. Etching by B. Pinelli, 1825. Credit: Wellcome Collection.



(Source: <https://wellcomecollection.org/works/a4zad9hz>)

Alighieri's anatomical knowledge (probably indebted to Mondino's work) emerges, instead, in the XXVIII canto of the *Inferno*. In the ninth chasm of the eighth circle, Dante encounters the instigators of scandal and schism (fig. 1) and among them Mahomet, who has compromised the uniqueness of the monotheistic religion of Christ. The sinner's body is opened almost as if on a dissecting table, it is "ripped open from the chin to where he farts" (up to the buttocks) and the entrails hang between the legs.

Even a cask with the bottom knocked out
Does not gape in the way that I saw one
Ripped open from the chin to where he farts:

Between his legs, his guts were hanging out;
His lights appeared, and that disgusting tube
Which makes shit of what goes down our throats.

While I was all intent on looking at him,
He looked at me, and his hand opened his chest;
He said: "Now see how I undo myself!

See how mangled Mahomet is:
In front of me, Ali goes weeping,
His face split open from his chin to his forelock.

Inf. XXVIII, 22-33 (translated by Sisson 1993, 164)

*Già veggia, per mezzul perdere o lulla,
com'io vidi un, così non si pertugia,
rotto dal mento infin dove si trulla.*

*tra le gambe pendevan le minugia;
la corata pareva e 'l tristo sacco
che merda fa di quel che si trangugia.*

*Mentre che tutto in lui veder m'attacco,
guardommi e con le man s'aperse il petto,
dicendo: or vedi com'io mi dilacco!*

*vedi come storpiato è Mäometto!
dinanzi a me sen va piangendo Ali,
fesso nel volto dal mento al ciuffetto.*

The image of Mahomet that Dante describes in the tercets seems to be taken from a treatise on anatomy or to be the result of a direct “autopsy” experience. It suggests that the poet may have personally witnessed anatomical dissections (Lippi 2021, 64; Lippi 2009, 182). Another passage also hints at the practice of anatomical dissection: it is about the torture of Marsia (Paradiso I, 19-21), the satyr who defied Apollo and was therefore punished by flaying. This anatomical procedure was among the first to be authorized by the Church.

In the *Divine Comedy*, however, Dante describes above all pain. Donatella Lippi points out: “The journey through the Inferno constitutes a path through a highly refined selection of painful sensations, due to the various punishments to which the damned are subjected” (Lippi 2021, 43).

Alighieri thus describes the sting pain of the pusillanimous, tormented by flies and wasps (Inf. III, 64-66), and that produced by Charon's oar when it “beats” the damned who linger on the shore (Inf. III, 109-111). The same pain also affects the angry condemned to beat themselves furiously (Inf. VII, 112-114), immersed in the Stygian swamp. There is also the pain that scrapes, rips and splits when Cerberus “scratches the spirits, skins them, pulls them to bits” (Sisson 1993, 69), under a cold and incessant rain (Inf. VI, 18). There is the “burning” pain to which the souls of heretics are condemned in their red-hot sepulchres (Inf. X). There is the “irritating” pain to which falsifiers are subjected. They are condemned to repugnant diseases and forced to scratch themselves continuously (Inf. XXIX-XXX), to reduce their punishment (Lippi 2019). According to Lippi, this very precise description of pain in relation to the punishment inflicted allows to identify at least 46 of the 78 terms reported in the McGill Pain Questionnaire (a tool to classify pain).

Finally, there are also numerous diseases to which Alighieri alludes in *The Divine Comedy* (Lippi 2021). He makes reference, for exam-

ple, to malaria (Inf. XVII, 85-87), when he describes the third round of the seventh circle. Here, those violent against God and Nature are subjected to an incessant rain of fire. Virgil invites Dante to climb on the back of the monster Geryon to pass to the next circle (fig. 2) and the poet reacts

Like one who feels malaria coming on,
And has already grown pale around the finger-
nails,
And trembles when he merely looks at shade
[...]

Inf. XVII, 85-87 (translated by Sisson 1993, 117)

*Qual è colui che sì presso ha 'l riprezzo
de la quartana, c'ha già l'unghie smorte,
e triema tutto pur guardando 'l rezzo [...]*

Fig. 2. Virgil and Dante sitting on the back of Geryon to be transported from the 8th to the 7th circle of Hell. Etching by B. Pinelli, 1825. Credit: Wellcome Collection



(Source: <https://wellcomecollection.org/works/ec5vgu54>)

Alighieri describes the malarial attack in a realistic way, using terms similar to those used in medical treatises to describe the quartan fever: the patient, taken by tremor, is seized by fever and his nails become livid.

He also speaks of dropsy (Inf. XXX, 49-63), while illustrating the punishment to which forgers, Mastro Adamo in particular, are subjected in the tenth chasm of the eighth circle:

I saw one made in the shape of a lute,
Or who would have been, if he had had an
amputation
And both legs had been cut off from the groin.

The heavy dropsy, which makes such
disproportion
Between the parts, with the fluid not
assimilated,
That the face does not match up with the belly,

Made him keep his lips always parted,
as a feverish man does, who, because of thirst,
Turns one lip down on his chin, and the other
upwards.

Inf. XXX, 49-57 (translated by Sisson 1993, 173-174)

*Io vidi un, fatto a guisa di leuto,
pur ch'elli avesse avuta l'anguinaia
tronca da l'altro che l'uomo ha forcuto.*

*La grave idropesi, che si dispaia
le membra con l'omor che mal converte,
che 'l viso non risponde a la ventraia,*

*facea lui tener le labbra aperte
come l'etico fa, che per la sete
l'un verso 'l mento e l'altro in su rinverte.*

The punishment of Mastro Adamo, remembered for having falsified the florin, is described in a particularly precise way: for the swelling of the belly, his body resembles a lute, while the face is emaciated and the lips open from thirst, as happens to the patient of consumption. In this same chasm, then, alchemists are afflicted by leprosy, impersonators run around animated by an angry fury, biting the other damned, and liars are feverish.

In several parts of the poem, Dante refers to the organ of vision and correlated possible pathologies. He also illustrates neurological-psychiatric illnesses, which provide clues to Dante's expertise on the anatomy of the nervous system. On the basis of Galenic ideas, the poet considers the spinal cord to be the origin ("principio", "beginning": *Inf. XXVIII, 133-142*) of the brain (*Inf. XXXII, 127-129*) and shows that he is well aware that damage to this anatomical part is lethal (*Inf. XXX, 28-30*). He also uses real technicalities, as in the case of the term "nuca" ("nape", *Inf. XXXII, 127-129*), from the Arabic *nukhā*, used with the meaning of "spinal cord". The word has penetrated the medieval medical language in the environment of the University of Bologna and Mondino himself uses it with the same meaning in the proem of his *Anothomia* (Fughelli, Maraldi 2012).

As for the diseases, in *The Divine Comedy* there are cases of paralysis, epilepsy, narcolepsy, from which Alighieri is believed to have suffered. In the fourth chasm of the eighth circle, for example, magicians and soothsayers are punished: during their life, they had the presumption of predicting the future and

now, by the Dante poetic justice, they can only walk backwards with their heads turned back, as if they were seized by paralysis:

It may be that there are cases of palsy
In which people are forced into such a twist,
But I have never seen them, and not credit it.

Inf. XX, 16-18 (translated by Sisson 1993, 128)

*Forse per forza già di parlusia
si travolse così alcun del tutto;
ma io nol vidi, né credo che sia.*

Fig. 3. Thieves being tortured by snakes in the 8th circle of Hell, watched by Dante and Virgil. Etching by B. Pinelli, 1825. Credit: Wellcome Collection



(Source: <https://wellcomecollection.org/works/wtt9rrag>)

Many scientist (in particular Lippi 2021; Ureni 2015) have then focused on the tercets in which Dante describes the encounter with Vanni Fucci, in the seventh chasm of the eighth circle. Here thieves are punished: naked among snakes, with their hands tied behind their backs, they undergo horrible transformations (fig. 3). Vanni Fucci – a black guelf known for his raids against opposing families – is bitten on the nape by a snake, turns into ashes and then immediately recomposes himself. The scene is narrated by the poet using a simile that many commentators have interpreted as the description of an epileptic attack (others, instead, of an apoplectic attack):

And as in one who falls, without knowing how,
By a demoniac force which drags him down,
Or some other obstruction which brings a man
to a stop,

When he gets on his feet and looks around,
He is entirely bewildered by the anguish
He has suffered, and as he looks he sighs;

Inf. XXIV, 112-118 (translated by Sisson 1993, 148)

*E qual è quei che cade e non sa como,
per forza di demon ch'a terra il tira,
o d'altra oppilazion che lega l'omo,*

*quando si leva, che 'ntorno si mira
tutto smarrito de la grande angoscia
ch'elli ha sofferta, guardando sospira;
tal era il peccator levato poscia.*

In particular, the first of the quoted tercets offers two explanations of epilepsy (Lippi 2021): according to the popular tradition the patient was possessed by demons, but from the physiopathological point of view the disease was caused by an obstruction of the vital circle. As in the case of "nuca" (nape), also "oppilazion" (obstruction) represents a technical term that was used in medical treatises to indicate the occlusion of a duct.

There are also Dante's autobiographical experiences in relation to the disease. Sleep, sleepiness and dreams recur frequently in *The Divine Comedy*, so much so as to lead some scientist to advance that Dante might have suffered from narcolepsy. At the beginning of the poem, Alighieri tells of being "full of sleep":

I cannot tell exactly how I got there,
I was so full of sleep at that point of my journey
When, somehow, I left the proper way."

Inf. I, 10-12 (translated by Sisson 1993, 47)

*lo non so ben ridir com'ì v'intraì,
tant'era pien di sonno a quel punto
che la verace via abbandonai.*

During his journey *in the underworld*, he also had sudden wake-dreaming transitions ("And then my drifting thoughts became a dream" ["e 'l pensiero in sogno trasmutai"] *Purg. XVIII, 145*), short and restorative naps ("Like someone who is wakened violently; And so I cast my rested eyes around me" ["come persona ch'è per forza desta / e l'occhio riposato intorno mossi"], *Inf. IV, 1-4*). He experienced visions and hallucinations, episodes of muscle weakness and falls triggered by strong emotions, as happens after hearing the story of Paolo and Francesca ("And fell down, as a dead body falls" ["E caddi come corpo morto cade"] *Inf. 5, 142*).

According to the neurologist Giuseppe Plazzi, these signs taken together could be attributable to narcolepsy, which causes episodes of irresistible daytime sleep, accompanied by sudden loss of muscle tone favored by intense emotions (cataplexy), sleep paralysis and hallucinations: "It is possible that Dante may have intuitively grasped the main features of narcolepsy, but it is also plausible that Dante's sleep, dreams, hallucinations, and falls are clues to a lifelong pathological trait and that Dante may have known of or had narcolepsy" (Plazzi 2013, 1221).

As reported in the *British Medical Journal*, Dante's works therefore reveal a knowledge of medical authors and an ability to describe and discuss medical matters that a layman could hardly have possessed: although Alighieri was not a practising physician in the common sense of the term, and he had never obtained a degree in Medicine at Bologna University or elsewhere, he nevertheless possessed a not inconsiderable practical and theoretical knowledge of the subject. He was not a "medical man", then, but he was certainly familiar with medicine.

Premuda proposes further considerations: "Dante's interest in medicine is to be traced back to his interest in philosophy in the broadest sense, of which a branch was medicine. [...] Dante's medicine is not only the result of manualistic culture and doctrinal preparation: it is much more. It is the synthesis of an active experience or the product of a dazzling introspective ability, of an admirable imaginative activity, evocative of clinical features on the basis of pure bookish data, grasped with exquisite penetration. It is the product of an acute, exceptional ability to grasp from the most dramatic clinical situations the most striking aspects and accents".

According to Donatella Lippi, finally, the medical skills of Dante were based on a solid theoretical and doctrinal background. He translated into his immortal poetry what he had perhaps learnt during his stay in Padua and Bologna and through the contacts he had in Florence (Panetto 2021).

References

Barbero, A. (2020). Dante, Bari-Roma: Laterza

- Bernabeo R.A. (1991). "La scienza medica in Dante", in Pasquini, E. Atti del convegno su Dante e l'enciclopedia delle scienze. Un omaggio dell'Alma Mater al Poeta, Bologna: Clueb, 29-39
- "Was Dante a doctor?". (1910). *The British Medical Journal*, 1 (2563): 395-396
- Cerbo, A. (2001). *Poesia e scienza del corpo nella Divina Commedia. Dicer del sangue e de le piaghe...*, Napoli: Dante & Descartes
- Ciasca, R. (1931). "Dante e l'Arte dei de Medici e Speciali", *Archivio Storico Italiano*, vol. 89 (Serie 7, Vol. 15), No. 1 (337)
- Fughelli, P., Maraldi, E. (2012). "Mondino de' Liuzzi e Dante Alighieri. Frequentazioni mediche bolognesi?", *Griseldaonline. Centro Studi Camporesi*; 1-7
- Lippi, D. (2009). *La Divina Commedia. Inferno. Con note storico-mediche*, Fidenza: Mattioli 1885
- Lippi, D. (2010). *La Divina Commedia. Paradiso. Con note storico-mediche*, Fidenza: Mattioli 1885
- Lippi, D. (2010). *La Divina Commedia. Purgatorio. Con note storico-mediche*, Fidenza: Mattioli 1885
- Lippi, D. (2019). "Un medico all'Inferno", *Toscana medica. Mensile di informazione e dibattito a cura dell'Ordine dei Medici Chirurghi e degli Odontoiatri della provincia di Firenze*, 9: 4
- Lippi, D. (2021). *Dante tra Ipocrate e Galieno. Il lessico della medicina nella Commedia*, Firenze: Angelo Pontecorboli Editore
- Panetto, M. (2021). "Dante700: era un medico il sommo poeta?", *Il Bo Live* (ultimo accesso 28 settembre 2021, url: <https://ilbolive.unipd.it/it/news/dante700-era-medico-sommo-poeta>)
- Piaia, G., (2020). "Pietro d'Abano. Filosofo, medico e astrologo europeo", Milano: FrancoAngeli
- Plazzi, G. (2013). "Dante's description of narcolepsy", *Sleep Medicine*, 14 (11): 1221-1223
- Premuda, L. (1965). "Aspetti medici nell'opera di Dante", *Lo Smeraldo*, 3: 31-36
- Sisson, C.H. (translated by). (1993). *Dante. The Divine Comedy*, Oxford: Oxford University Press
- Ureni, P. (2015). "Lo 'stupor mentis' a occhi aperti di Vanni Fucci (Inf. XXIV, 97.118)", *Dante: Rivista internazionale di studi su Dante Alighieri*, 12: 55-67
- Zampieri, F. (2019). "L'eresia del medico-mago che ispirò anche Giotto", in *Redazione de Il Bo Live (a cura di), Medici rivoluzionari. La scienza medica a Padova dal Duecento alla Grande Guerra*, Padova: Padova University Press