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# **Working Paper of Public Health**

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Nel sottomettere un manoscritto alla segreteria di redazione, l'autore accetta tutte le norme qui indicate.



*Title:* Patients' decision making process

*Authors:* Ippoliti R.<sup>1</sup>; Falavigna G.<sup>2</sup>;

*Type:* Original article

*Keywords:* Patient; Decision making process; Physician; Clinical Research;

*Abstract*

**Object:** this work tries to solve some open issues related to the patients' decision making process and their choice of the medical center for hospitalization among several suppliers of medical treatments;

**Methodology:** taking behavioral bibliography into consideration, a decision making process is proposed;

**Results:** this paper suggests that people's choice are more reactive to the way in which a message could be given (i.e. physicians' framing strategy) than to the content of that information;

**Conclusions:** according to the gravitational behavior model, the physicians' approach can induce an overestimation of the net benefit from going to the hospital located in the other region, higher than the net loss of consuming a quality level different from the desired one in the residential one.

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### 1. Decision making process

Let us imagine a patient, a sick person who needs appropriate care. Obviously, assuming that there is an information gap, this person will go to his/her general practitioner in order to receive appropriate medical treatment. An exchange of information occurs. On one side, the patient shows the symptoms of that disease whereas, on the other side, the practitioner makes a diagnosis.

According to Arrow (1963), medical care is the realm of uncertainty as well as of asymmetrical information among parties, i.e. physicians and patients. Indeed, the general practitioner could be thought of as the link between medical care demand and supply. The practitioners' medical knowledge is higher than the patients' but, the former might not be able to make specific diagnoses or prescribe appropriate treatments since that knowledge, as well as their personal experience, is general. In other words, a practitioner might be able to recognize and prescribe appropriate medical treatment only for simple cases, similarly to what wise old men did in bygone ages. According to Pauly (1978), this is exactly the idea of "*irreducible uncertainty*" that is the state of general uncertainty about the initial health status and effects of treatments, by both patients and physicians. This means that the general practitioner might easily order patients to undergo specific examinations in order to make a better diagnosis. That is to say, a practitioner might easily delegate to another physician the patient's diagnosis, the prescription of medical treatment and its performance, as well as the choice about potential hospitalization.<sup>3</sup>

In view of this, might patients be able to perceive a wrong diagnosis? In other words, considering the existence of this uncertainty, might a patient recognize the inappropriateness of a prescription? Also, how could the choice of the medical center for hospitalization be determined by the patient?

The relationship between patient and physician is based on the trust the latter puts in the former's diagnosis and relative prescription. According to the behavioral approach, this trust might be based on the patient's previous experience.<sup>4</sup> In other words, if the previous prescription was effective, there will be trust in the physician's suggestions; otherwise, if the

<sup>3</sup> To see the issue from another prospective, this might be a case of defensive medicine. Indeed, according to Danzon (2000), this delegation process might be thought of as a case in which the physician conducts procedures to be protected against litigation.

<sup>4</sup> Jolls et al. (1998) suggest that the probabilities will often be affected by how "available" other instances are and, considering the available medical options, by the previous medical events. Indeed, taking asymmetrical information into account, McGuire (2000) suggests that the medical outcome (i.e. patients' health) could be one of the patients' key indicators of physicians' effort.



past experience was negative, a mobility process will start towards a place where the perceived effectiveness is higher. Obviously, this perception might be linked to personal experience as well as experiences of other people close to the patient. This means that patients are not able to recognize the validity of the medical treatment suggested by the physician but, based on previous experience, they might believe in that prescription. This is exactly the cognitive dimension that was suggested in the previous section, i.e. the belief that a patient can have about the physician.

Referring to the above mentioned patient, let us assume the general practitioner's easier way to face the issue, that is to say, prescription of tests and/or medical examination, as well as potential hospitalization. After these tests, assuming the presence of several public medical care suppliers and the patients' freedom of choice among them, where will they be hospitalized to receive the prescribed treatment? Could the choice of a medical center be guided by the above mentioned process?

A medical center is simply a set of people with specific medical knowledge and technical instruments to make diagnoses and give medical treatments. This means that the medical center's reputation reflects the patients' trust in these workers; that is to say, the centre's reputation is affected by each single medical activity of these workers on the patients. These people need the patients' trust to perform their work. Otherwise, if these sick people do not believe in their *saviors* (i.e., the center has a bad reputation or it has failed a validation process), a mobility process will be performed, as described above. Moreover, considering that the medical centers' activity might be more invasive than the simple examination of a general practitioner, this trust will necessarily be greater. This is exactly the behavioral dimension, i.e. the physician's approach to the clinical case, which confirms or disproves a previous good/bad belief and might lead to non-validation.

According to the proposed background and taking hospitalization into account, even if there is an information gap among the parties or there are no previous experiences, people would be pushed by an internal force to move towards a better medical center. This force could be defined as the patient's survival instinct, i.e. a force able to distance the patient from *bad* medical centers, although this is only a perception and they are not truly aware of the imminent risk. Like a gazelle might unaware of walking into the lion's den, a patient might unaware of putting his/her head into the lion's mouth. What could help both the gazelle and the patient is their perception that they are on the borderline, that is to say the perception of an imminent risk. The force behind this perception is precisely their survival instinct.



Obviously, here the risk concerns the inappropriateness of diagnosis and the prescription of a medical treatment which could kill you. However, there is still an issue to be analyzed: what could affect the perception of good or bad medical care supply? In other words, what could affect both the cognitive and the behavioral dimension?

As a gazelle might be alarmed by an unusual sound made by an inexperienced predator; patients might be alarmed by other signs given by physicians that might remind them of previous (bad) experiences, i.e. something that might lead these patients to underestimate the perceived probability of a successful output. More elements might shape the patients' perception but, taking the information gap into account, the dominant factor might be the approach to the clinical case by the physician, as well as by other operators (e.g. nurses or technicians). In other words, even if the patient is not able to check if the physician's action is effective or not, the physician's approach to make a diagnosis and/or perform a medical treatment might be a good proxy of the effort put in that clinical case, hence a way to validate the medical centre's reputation.<sup>5</sup> This means that, if the behavior of these workers looks detached, that is to say, the patients perceive that their health is not the core of their activity, the effect could be negative. For instance, physicians might aim to maximize their expected profit instead of the people's health, thus causing a discrimination against poorer patients, at least for what concerns the manner in which they are treated.

At the same time, considering a public institution, workers can be assigned to it as a consequence of political friendship instead of their professionalism. In other words, a physician might not be able to deal with a clinical case, i.e. making an appropriate diagnosis or prescribing an effective medical treatment. Another consequence of this *political professionalism* could be at the administrative level, in the inefficiency of organization, which contributes to long waiting periods for examinations (i.e. waiting lists). Obviously, the natural consequences of this political interference could be both a lower productivity of all the workers, since some of them are politically untouchable and a bad example to the others, and their distance from the patients' needs. In other words, since the activity of some workers cannot be judged by the managers, as this would be politically unacceptable, their private interests will come before the public interest and other workers will begin to lose motivation due to these *bad examples*. Of course, the impact on the patients' mind will necessarily be negative, i.e. a perception of lower effort made by these workers as well as doubts about their

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<sup>5</sup> This work suggests the idea that a medical center might have a good or bad reputation but that only the physician's approach can confirm a previous good or bad experience or change the patient's opinion. After the confirmation of a bad



abilities. For instance, let us consider a hospitalized patient who witnesses a *heated clinical debate*, in which a physician's view about the patient's clinical case differs from another physician's. These heated differences can have severe repercussions on the medical center's atmosphere and this could be due to the discretionary choices of politics.

Another point to consider is something that is strictly linked to the innovation of the proposed medical treatments. Considering pharmaceutical clinical research, which is the effect of innovation on patients' perception? In other words, when looking at the workers' effort (i.e. their approach to the clinical case), is a positive correlation between innovative medical treatment and patients' mobility admissible?

Human experimentation is a process in which pharmaceutical companies test candidate drugs to collect clinical evidence on them. According to the experimental protocol, physicians are involved in this process as medical researchers in order to enroll patients, treat them and collect the necessary evidence.<sup>6</sup> This means that the above mentioned hypothetical patient might be asked to participate in a trial, and be treated with an innovative medical treatment whose expected effectiveness is higher than that of a current treatment. Obviously, in order to involve sick people in a risky activity, such as a clinical trial, the best possible performance of medical researchers in their relationship with the patients is necessary. In other words, assuming that these physicians wish to develop the trial, for scientific or economic reasons, they will behave in a certain way in order to gain the patients' trust and involve them in the experimentation. The medical researcher will appear close to the patients and their disease, giving them a placebo injection through the expectations about the experimental treatment. Emphasizing the good output (patient's improved health) leads the patients to overestimate the expected effectiveness and overcome their potential risk aversion.<sup>7</sup>

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reputation, the mobility process could start. This means that a bad reputation of the medical center and a good approach of a single physician might lead the patient to believe in the proposed activity and hospitalization will occur (i.e. no mobility).

<sup>6</sup> Clinical trials are conducted in phases. Each trial phase has a different purpose and helps scientists answer different questions. For each step of this clinical investigation, a specific ethical opinion from a competent Institutional Review Board is necessary. This is the single ex-ante regulation within the realm of human experimentation. In detail, there are three phases in the pharmaceutical clinical research., According to the National Health Institute, they have the following features: "...Studies of phase I in which researchers test an experimental drug or treatment in a small group of healthy people (20-80) for the first time to evaluate its safety, determine a safe dosage range, and identify side effects... in phase II trials, the experimental study drug or treatment is given to a larger group of people (100-300) to see if it is effective and to further evaluate its safety... in phase III trials, the experimental study drug or treatment is given to large groups of people (1,000-3,000) to confirm its effectiveness, monitor side effects, compare it to commonly used treatments, and collect information that will allow the experimental drug or treatment to be used safely...". For a deeper analysis, see <http://www.clinicaltrial.gov>.

<sup>7</sup> According to the Prospect Theory, this emphasizing strategy is also known as framing strategy. Indeed, Kahneman and Tversky (1979) suggest that a choice might be affected by the specific framing strategy implemented by someone to stimulate a certain decision. See Sankar (2004) for a specific analysis of this framing strategy applied to human experimentation.



Obviously, the physicians' behavior in the enrolment process might be perceived by the patients as a proxy of effort put in their clinical case. This means that, according to the proposed model of patients' perception and relative mobility towards the best medical care supplier, a positive relation with pharmaceutical clinical research could be plausible thanks to the physician's effort in the enrolment process. In other words, doing research might be an opportunity to strengthen a previous good position, i.e. an opportunity to validate the behavioral dimension. If somebody is involved in an experimental treatment at a medical center, their good perception of medical quality of that center will be affected (positively) by the experience. Obviously, clinical research can only add value and strengthen the center's good reputation which generates mobility deriving from the trust between the centre and the patients. This means that clinical research could be an opportunity to perform a marketing policy and be competitive on the national market of medical care.

What about innovation? Are we sure that patients are not affected by the higher expected innovation instead of by the physician's greater effort in the enrollment process?

Ippoliti (2010) suggests the existence of an ideal market in which information is exchanged for innovation. However, he also suggests the failure of that market, since research subjects could be affected by the physicians' expectations.<sup>8</sup> Moreover, even if patients could be affected by the innovation, there is more evidence about the patients' inability to understand the nature of an experimental trial (i.e. the fact that the proposed treatment is innovative and implies both expected benefits and risks). This phenomenon is well known in medicine and bioethics as therapeutic misconception (Appelbaum 2002; Appelbaum et al. 1987; Daugherty 1999; Emanuel 1995; Freedman 1990; Miller 2000). Considering their works, the assumption that patients are more affected by the medical researchers' effort rather than by the expected outcome of an innovative treatment sounds more consistent, especially if we consider that the physician's communicative role in the enrollment process is the key factor in the patient's choice (Sankar, 2004). In other words, this paper suggests that people are more reactive to the way in which the message is given (i.e. physicians' framing strategy) than to the content of that information. At the same time, good feedback about the validation process of already existing good reputation might be communicated to the social network, i.e. all friends and/or relatives who might be potential future users of that medical facility.<sup>9</sup>

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<sup>8</sup> Also see footnote 3.

<sup>9</sup> A physician might be judged for his/her approach to the patients (i.e. time and attention in the informed consent), making the difference in their opinion (i.e. medical facilities' reputation). Then, the social network of these patients will be the tool to spread the information among people and affect patients' mobility. For example, the authors suggest that a patient might say "that hospital is fantastic, all workers are so kind..."



## 2. Discussion

This paper has described the decisional process of a patient. According to their personal experience and/or the experience of somebody close to them, there could be an overestimation (or underestimation) of the expected output of the medical treatment, which makes it possible to estimate that there is a net benefit from going to the hospital located in the other region (i.e. gravitational behavior model). On the one hand, there is a perception of what your home medical system could be whereas, on the other hand, there is the perception of what another system could be. Even if there is an information gap, the physician's approach might trigger this perception, pushing sick people to move towards a better place, i.e. towards a place where the reputation of the medical care system is better. This is exactly the key hypothesis of the patients' decisional process: the physician's approach is the motivating factor of the patient's perception, that is to say an approach that might validate (or not) the reputation of a medical care facility and start (or not) a mobility process. According to the gravitational behavior model, the physicians' approach can induce an overestimation of the net benefit from going to the hospital located in the other region, higher than the net loss of consuming a quality level different from the desired one in the residential one.

Starting from that decisional process, there could be a potential development in an empirical analysis aimed at supporting the main result of this work: the (positive) role of pharmaceutical clinical research in the patients' mobility process, i.e. the choice of a medical facility to receive hospitalization. Obviously, considering the specific national background, also the (negative) role of political influence could be analyzed to better support the proposed decision making process based on people's perception.

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instead of saying "that hospital is fantastic, they make *laparoscopic cholecystectomy* in a beautiful way...". Obviously, this approach is coherent with the idea of people affected by bounded rationality (i.e. technical language).



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