EDITORIAL

Evidence (and research) are the only possible basis of medicine

La evidencia (y la investigación) son las únicas bases posibles de la medicina

The world of research is rarely well understood by clinicians. Sometimes scepticism prevails over confidence, and personal experience appears to many as a better teacher than scientific literature. The aim of this editorial is to offer clinicians some tools to better understand this "Wizard of Oz" world of research, coming from a clinician who happened to be also a researcher and finally an editor.

Experience: the usual, faulty teacher of physicians

When we are kids we rapidly learn to rely on our experience. At the start our parents, who are our very first teachers, tell us what to do: we do not touch the fire. Then, after a while, we start to explore what is around us and, doing our first personal research, we verify what our parents tell us: we touch the fire, and the subsequent burn clearly tells us what to do, and also teaches us to rely on what we have learned from our own experience, which finally confirms what reliable teachers our parents are. When we become doctors, we follow almost the same path: teachers tell us what to do, then we try, and we "believe" or not, and we "know" because we "believe".

Unfortunately, what we really learn from our experience as physicians is what drives us to the conclusion that can be seen in some of the eldest among us, mainly the "famous" ones: a megalomaniac delirium of omnipotence. In fact, we continue to see our own successes, but we forget that all our mistakes and/or disasters do not come back to us: they seek help from others. Moreover, we are apparently the only ones able to solve the terrible mistakes that everybody else continuously makes: the reality is that, since we see what did not work in the hands of others, we can avoid making the same mistakes, hence being able to reach better conclusions than before.

Another factor to be considered in this equation is the "vis sanatrix naturae", i.e. the tendency of many pathologies to be self-resolving. In this context, being the last link in the chain, the one that receives the patient after everybody else, simply allows time for the disease to complete its own course and resolve itself independently of what we ourselves do (if we are smart enough to avoid doing any harm). This is totally the case with acute low back pain (ALBP), where what each of us does (different from what most of the others do) appears useful, but only because ALBP self-resolves quite rapidly: in fact patients, once they have been told what the natural history of the disease is, most often prefer doing nothing rather than being treated.

But, if we discard our experience, what are we to rely on?

Wizards vs physicians

King Charles II (1630—1685) had the best physicians of England at his Court. When he had a stroke on February 2, 1685, he was treated with the best available resources of Medicine of the time. Here is the outstanding succession of treatments he was "awarded":

- 16 oz of bloodletting
- Imperative sitting, not to sleep
- Glass cupping on the shoulders
- Shoulders’ scarification with another 8 oz of bloodletting
- High doses of emetic and purgative, with repeated clysters
- Head shaven with needle-stuck
- White-hot cautery

The King was lucky enough not to wake up any more, and died in 4 days. This report tells us something about
the experience- and master-rooted Official Medicine of the
time, and its basis. The question is: what makes Official
Medicine now different from that available to poor King
Charles II, but also from Alternative or Complementary
Medicine? It is mainly by the tools of methodology, as we will
see.

Doctor James Lind, FRSE (1716—1794), was a young physici-
ian working for the Royal Navy of His Majesty the King of
England. That was the time of scurvy, a real scourge during
long voyages in the age of the discovery of the world. Now
we know a lot about scurvy, but this was not the case at
Lind’s time. In 1747 he was in some trouble, since the Royal
College of Surgeons (of which he was a member) and the
Royal Admiralty (his payers) were engaged in a dispute about
what the best treatment was to avoid scurvy, the former
suggesting low-dose sulfuric acid, and the latter spoonfuls
of vinegar. Lind personally was convinced that help could
come through an acid dietary supplement. In the face of
this, he decided to check experimentally what the best solu-
tion might be: as soon as scurvy began to affect his ship,
he divided the sailors into six pairs. They received the same
diet, with different supplements for each pair: cider, sulfuric
acid, vinegar, seawater, barley water, and two oranges plus
one lemon. After 6 days they ran out of fruit, but the two
sailors of the last group recovered; all the others remained
sick, apart from the first pair receiving cider, who had some
advantages from this supplement. This is known as the first
controlled trial reported in the history of medicine. Unfortu-
nately, Lind did not completely understand what he had
done, and only almost 50 years later, in 1794, was lemon
juice experimented again and the Admiralty convinced. This
story tells us that a lot of time can pass between a discov-
ery and its everyday application (today some 10—20 years
have been reported),\(^1\) sometimes because the first devel-
oper is too blinded by his own ideas to believe what he has
found. But, most of all, it tells us about the importance of
the scientific method, on which Official Medicine decided
to rely. And this gives, in my view, the only real difference
between Official and Alternative/Complementary Medicine:
when the latter undergoes the same methodological path as
the first, it can (and should) be considered on the same level
and under the same term of “Official”. This is the case of
acupuncture in some respects,\(^2\) and of osteopathy or chiro-
practic when we speak of the manipulative act, but not when
we refer to their theories or other practices.\(^3,4\) Apparently,
this is not the case, until now, with Homeopathy.\(^5\)

The “New Era” of medicine we are building

I was given the opportunity some years ago to see the first
paper demonstrating scientifically the correlation between
disk herniations and sciatica, and stressing the importance
of the surgical approach, by Mixter and Barr:\(^1\) it had been
published in the New England Journal of Medicine back in
1934 on 16 patients only, and the methods section was full of
calculations, with some very simple statistics, such as stan-
dard deviation, or correlation. This not only explains why
there were only 16 patients (too hard to include more), but
also tells us (due to this reduced sample for a premise at
the base of many therapeutic behaviors) how low reliability
is with regard to a lot of the old theories of medicine, even

if gathered through research. In the meantime, it led me
to understand that we are now building something new in
terms of research, only since the late 70s and the 80s. The
spread of personal computers has brought about the incred-
ible increase of science in Medicine we have seen in recent
years.\(^6\) Now it is possible to gather evidence from thousands
of patients with just a few minutes of calculations. It is only
a question of good methods and not of mathematical abilities.
We are finally reaching some good and reliable conclusions
on which we can really base our practice today, and on which
future researchers will be able to build new insights and
knowledge.

In the Middle Ages mankind experienced an apparent
period of standstill in growth: there was a philosophi-
cal background for this. People in fact used to think of
themselves as midgets on the shoulders of giants, i.e. the
Romans and Greeks who had been able to develop knowl-
edge and science and philosophy to what was thought to
be the maximum possible. Everything changed with the
Renaissance, when the scientific method was developed,
and gradually the progress began. The same has now been
underway for some decades in the humanistic science of
Medicine, where we have now stopped relying solely on
the unstable shoulders of our giant masters, but we can
build future knowledge from the sound foundations of the
present.

Future help to defend us from false scientists

Obviously not everything is good by definition, just because
we call it research and science. The problem is that dis-
inguishing the wheat from the chaff is not easy if one is
not trained well enough to avoid the traps laid by bad mas-
ters and bad researchers. This is the reason why, in future
issues, the European Journal of Physical and Rehabilitation
Medicine (EJPRM) will develop a Thematic Series on Clinical
Epidemiology for Rehabilitation Specialists, to give readers
and clinicians the tools to better understand what they read
in the EJPRM and in all the other journals in the field. On
the same line, our editorials will aim to open the door to
a greater understanding of research, and offer our readers
the tools to prevent them from false scientists.

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