

# Opening the horizons of clinical reasoning to qualitative research

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**Abstract.** Clinical Reasoning (CR) is an important aspect of health professional education and effective practice. It is a complex series of factors and cognitive functions, involving higher-level thinking to define problems, examine the evidence and then making decisions and choices to improve the patient's physiological and psycho-social state. CR consists of 3 interconnected and interdependent sub-processes: clinical experience and clinical context and Evidence-Based Practice. This essay focuses on the opportunities that Qualitative Research offers during the CR process when the doctor finds the evidence to address a patient's health problem. Clinicians are often faced with questions that randomized clinical trials or systematic reviews of efficacy studies cannot answer. For this reason, we considered it necessary to offer an expanded view of the process of interpretation of the scientific literature used in daily clinical practice through the complex process of Clinical Reasoning, through the use of studies conducted with qualitative methods, which are able to respond to a different range of clinical questions, and to support studies based on the effectiveness of treatments. ([www.actabiomedica.it](http://www.actabiomedica.it))

**Key words:** Clinical reasoning, Evidence-Based Practice, Qualitative Research

## Introduction

Clinical reasoning (CR) is an important aspect of health professional education and an effective practice (1). It is a core and essential skill for physicians (2, 3). It represents a critical component in the development and training of healthcare professionals from when they start as students (2). It is a complex series of factors and cognitive functions, involving higher level thinking in order to define problems, examine the evidence and then making decisions and choices to improve the patient's physiological and psycho-social state (1, 4, 5). CR goes beyond the initial diagnosis and extends into all aspects of clinical practice and management (2). Medicine's scientific paradigm has changed and dramatically evolved over the decades, and along with it, the practice of medicine has changed.

During clinical encounters with patients, experienced physicians engage in numerous clinical tasks, including listening to the patient's story, reviewing the

patient's past records, performing a physical examination, choosing the appropriate investigations, providing advice or prescribing medications, and/or ordering a consultation. These behaviours which provide the basis of clinical reasoning are influenced and driven by "what" physicians think about "what" and "how" they think (6). The clinical reasoning, therefore, consists in integrating all the acquired knowledge up to that moment, in pondering the evidence and in drawing on the experience to reach the definitive diagnosis for a patient's condition (7). Also, it is important to highlight that medical errors as a consequence of faulty reasoning contribute to patient morbidity and mortality (8-10).

Clinical reasoning is an interpretive practice, not a precise science, and it is made of several processes. CR is an intrinsically contextual clinical competence that develops with practice, reflection on experience and responds to the ability to recover knowledge and the organization of thought during the hypothetical cause

analysis. In this complex process, an important role is played by the scientific evidence that the doctor has at his disposal to complete the clinical picture and reinforce his ideas on individual cases. In this sub-process, clinicians adopt the Evidence-Based Practice (EBP) approach. EBP must be considered as a continuous and intertwined sub-process part of CR, within the complex process of CR interacts continuously with two other sub-processes: clinical experience and clinical context (11).

Despite appeals for medicine to be 'evidence-based' and 'scientific', clinical reasoning does not conform to the conventional criteria of a scientific methodology. It uses a sample size of one (the patient), employs individual interviews to gather information, qualitatively analyses and interprets imaging information, interprets objective quantitative results and adopts an interactive approach to reach to a final diagnosis. CR is often a shared cognitive process taking place in a busy and time-pressured environment, involving conversations between the patient and clinicians (12). Furthermore, healthcare professionals in this complex process, must identify the consultation of the best, clearest and most undeniable evidence produced by the scientific community (13), in order to be able to put this fundamental skill into practice, sharing the decision-making process with the patient, and guaranteeing a high-quality service.



**Figure 1.** Clinical reasoning

### **Evidence-Based Practice and best evidence available to clinical questions**

As highlighted previously, Evidence-Based Practice involves basing clinical decisions and practice based on the best available evidence. So, what is "the best evidence available"? The hierarchy of evidence is a fundamental principle of EBP and attempts to answer this question. The hierarchy of evidence allows a top-down approach to be taken to identify the best evidence according to which a recent systematic review is sought first and, if this is not available, (enables to move on) move on to the next level of scientific evidence in order to answer the question. Hierarchies of evidence became popular with the Canadian Task Force on the Periodic Health Examination in late 1979 and since that time many different hierarchies have been developed and used (14-20). EBP hierarchies rank study types based on the rigour (strength and precision) of their research methods (21).

#### *The Hierarchy of evidence in Clinical Reasoning*

Medical research has been predominantly quantitative with randomized controlled trials (RCTs) being the gold standard of medical research and systematic reviews of RCTs, considered the highest level of evidence (22, 23). This evaluation method suggests that all clinical questions can be answered by a Systematic Review or Meta-Analysis. And that, if a current, well designed systematic review is not available, it is necessary to consult primary studies to answer the question (24). This type of approach may not be useful for evaluating the evidence that evaluates, from another point of view, the different aspects of clinical care pathways. A limitation of the majority currently considered hierarchies is that most focus exclusively on effectiveness. To this assumption, it is necessary to add that the RCTs are generally conducted on selected and homogeneous populations, excluding the "complex" patients (comorbidities, elderly), women, children, who risk to compromise the internal validity of the study.

In this context, although there has been recognition of the importance of practitioner's expertise and patient's preferences in the expanded formulation of evidence-based medicine (25) and, thus, of EBP, re-

search evidence is still portrayed as greater in value to the extent to which it conforms with the structures of classical experimental methodology, that is, blinded, RCTs and meta-analysis thereof (26). According to the hierarchy of evidence, randomized control trials are the most valid source of evidence. However, randomized control trials overlook certain types of knowledge, and this led to highlighting areas of shadow in the field of medicine (27), relegating largely population-based outcome studies to the lower levels of evidence, even though it would usually be impossible to answer the questions those studies pose by using blind RCTs. In the familiar single-hierarchy EBP model (28), there is no designated place for qualitative evidence. Qualitative methods, are often not included in widely accepted classifications of evidence (e.g. SORT- Strength of Recommendation Taxonomy), or is considered the lowest level of evidence, alongside case-reports, expert opinion, and anecdotal findings (22, 23). Although there is some suggestion of a recognition of the importance of qualitative research by Evidence-Based Medicine proponents as, for example, Sackett & Wennberg, (30) in “Choosing the best research design for each question”, the methods of qualitative research are little taken into account, and this implies an obscuration of its specific potential in

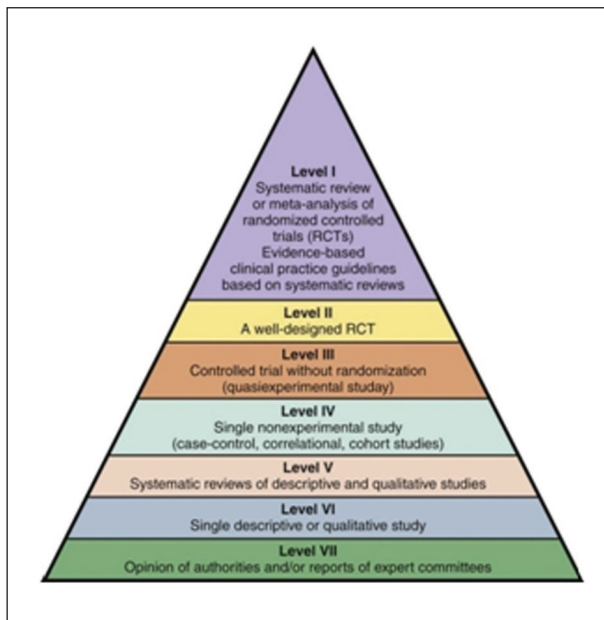


Figure 2. Hierarchy of evidence (28)

the attempt to understand holistically the phenomena of daily clinical practice.

The theoretical structure of EBP has not yet evolved so as to align itself with the essential decision-making needs of practitioners (31). This can be problematic for professionals (32), that today are faced with assessments of perceived quality of services (33) and that need to open new horizons to improve the quality of care and the perception of healthcare services (34).

#### *The qualitative evidence to support the Hierarchy of evidence in Clinical Reasoning*

Sackett, Rosenberg, Gray, Rosenberg, Gray, Haynes, & Richardson (35) stated: “Evidence based medicine is conscientious, explicit, and judicious use of best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available clinical evidence from systematic research”. In this statement, it’s possible to find a large space for action for qualitative research.

Although the EBP appears to share very similar definitions, aims, and procedures with reflective practice, this process has not yet been really implemented. Hence, it is possible to identify a large and beneficial maneuver space in the evidence-based practice movement, for the use of reflection on practice, rather than the use of the hierarchical structure of evidence.

The quality of the evidence often refers to its statistical validity and the reproducibility of the research. However, it is necessary to open the field to further perspectives, i.e. those that emphasize contextual feasibility and context comprehension. At this point, a more complex view of the phenomena to be faced emerges, and from which to draw inspiration to obtain more information, in addition to the development of new research areas that have so far remained unexplored.

#### **Clinical reasoning and Qualitative Research: toward contextual feasibility and comprehension**

Clinicians are often faced with questions that cannot be answered through a randomized trial, a survey, or a clinical trial. Research methods have given us the

ability to expand our knowledge about diseases, but it remains the task of the clinician to apply all of this evidence to patient care (36). In fact, in some cases, the nature of the questions comes out of the predefined schemes of the purpose of these studies for the reasons that were earlier discussed in this essay. In this context there is an increasing need to have available studies that answer these questions more clearly, that address the complexity of the human being, that explore the meaning that people give to the different moments lived in the health field, which reveal the intricacies of psychosocial processes and define theoretical frameworks capable of interpreting these phenomena. These studies can complement clinical research, directing it towards new horizons, with the aim of closing the circle around the assisted person and his family. So, understanding these phenomena can be helpful for professionals, humanising a service that very often, due to technological innovation, hectic times, the need to produce health, a term that in this society often equates to physical well-being, forgetting the psychological and social spheres, which in reality according to the WHO (37), make up this complex framework.

At the same time, a more complex approach to the phenomena addressed in clinical practice, through the consultation of qualitative studies, will allow the assisted persons to feel listened to, understood and probably more involved in the therapeutic process, activating a truthful and harmonious therapeutic relationship, avoiding negative consequences preventable with the extension of the vision that a clinician can learn to implement in the CR process. According to Durning, Artino, Schuwirth & van der Vleuten (38), that conducted a study on an understanding of clinical reasoning, it is possible to identify a space for the adoption of principles of qualitative methods and mixed methods could add to a framework of clinical reasoning.

#### *Adopting qualitative studies in Clinical Reasoning: why?*

The argument that qualitative methods can contribute to answer the questions not easily addressed by randomised controlled trials is not new (39). Evidence-Based Practice share very similar definitions, aims, and procedures with reflective practice (32). Much has been written on the uses and value of sociology for medicine,

and indeed there has been a growing acceptance of its methods in healthcare research, including its contribution to randomized controlled trials when these are appropriate (40). In the context of the debate about EBM, it is vital to reiterate that good 'evidence' goes further than the results of meta-analysis of randomised controlled trials. The limitations of these trials, and the evidence about barriers to their utilisation by practitioners should not lead to cynicism about the role of research evidence in health care. It's necessary to be sure that it is the right kind of research to answer the questions posed (39). Therefore, for healthcare professionals, it is essential to ask the right question, focus the evidence from the right perspective, and observing the phenomenon adequately so as to make fluid the discussion on a topic when evaluating the evidence produced by the scientific community, in such a way as to guarantee their correct application, in the daily clinical practice.

Qualitative methods are useful for understanding complex situations in the real world. They do not have the purpose of defining reputable effects: this is the reason why qualitative methods are found at the base of the pyramid and its evidence are considered of low quality. Effectiveness is concerned with whether an intervention works as intended. While this is obviously vital, the scope of any evaluation should be broader (41). In effect, it is also important to know whether the intervention is appropriate for its recipient and for the context. From this perspective, the evidence on context comprehension concerns the psychosocial aspects of the intervention, his/her desires, social conditions, and so would address questions related to its impact on a person and his/her family, also in terms of the life, his/her acceptability, and the ability to adhere by the patient and his/her loved ones. It's important also, to consider how another dimension of evidence, relates to its feasibility, and so involves issues concerning the impact it would have on an organization or provider, and the resources required to ensure its successful implementation. Feasibility encompasses the broader environmental issues related to implementation, cost and practice change.

From the framework shown, the possibility emerges for clinicians to have a further range of studies and approaches that can answer the questions that emerged from the problems identified once they came

into contact with the patient. This approach will lead to a widening of the clinical view, opening the door to the identification of problems of a human nature, which, if faced in appropriate times and ways, can help in solving the most complex situations, those not described in effectiveness studies, that concerning the real life, to the problems of the human being who is facing a period of lack of health.

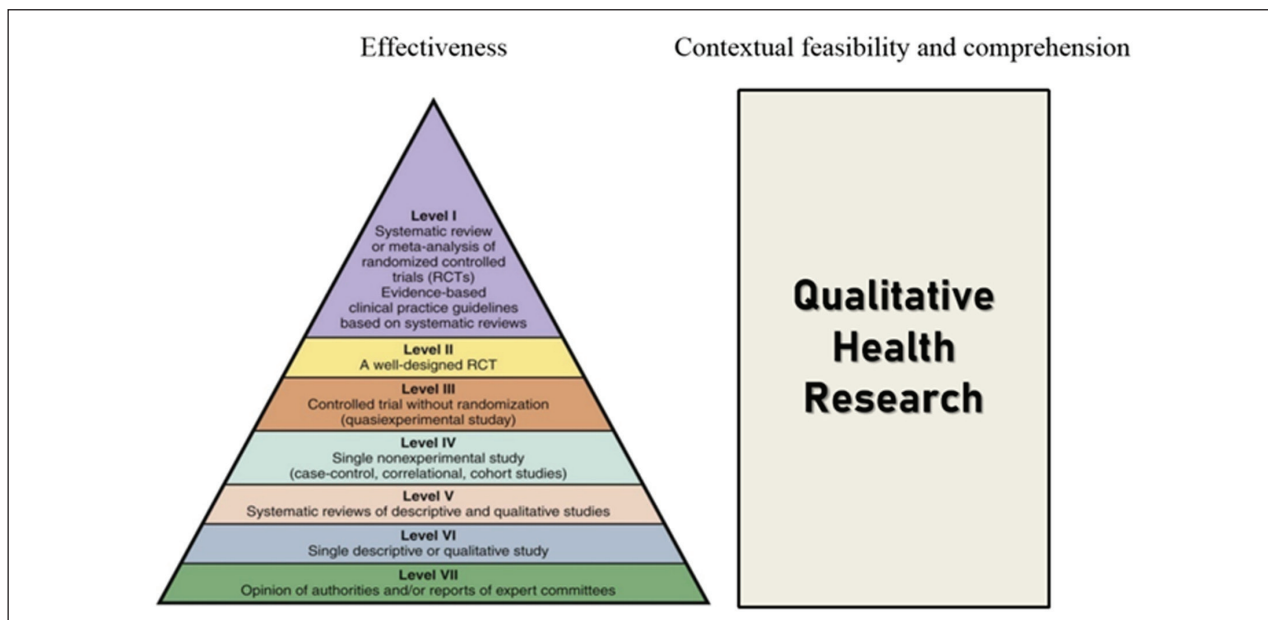
In the last decades an important growth in the number of qualitative studies in the health field is occurring (42, 43). Scholars in diverse health-related disciplines and specialty fields of practice routinely promote qualitative methods as essential components of intervention and implementation programs of research and of a comprehensive evidence base for practice (45). Qualitative methods enable determining in which way evidence are translated into practice as derived from quantitative research (39, 45). Qualitative methods, in particular, address research questions that are different from those considered by clinical epidemiology. Qualitative methods can investigate practitioners' and patients' attitudes, beliefs, and preferences, and the whole question of how evidence is turned into practice. The value of qualitative methods lies in their ability to pursue systematically the kinds of research questions

that are not easily answerable by experimental methods (39).

### *The scientific nature of Qualitative Research*

Qualitative research methods could help us to improve our understanding of medicine. Rather than thinking of qualitative and quantitative strategies as incompatible, they should be seen as complementary (46). Although qualitative methods commonly could be viewed as the antithesis of the clinical trial and far removed from the immediate practical aims of intervention studies and practice, qualitative methods can be used to enhance the significance and harness the benefits of clinical trials, and to emphasize the distinctive work and outcomes of nursing care (47). Qualitative health research (QHR) is best characterized not by its qualitative data, but by various hypotheses on how social reality (ontology) is and how we can better learn the truth about this reality (epistemology). These premises differ from those required for conducting, analyzing and believing in the results of quantitative research, such as a randomized controlled trial (48).

The scientific nature of qualitative research is to be understood in terms of rigor: rigor in the imple-



**Figure 3.** The evidence that best answers the clinical problem



mentation of methodological indications shared in the literature, rigor in the use of logical inferences typical of abductive reasoning, rigor in evaluation (49). In healthcare, qualitative research contributes in particular regarding psycho-social aspects of patient care, health services provision, policy setting, and health administrations. Despite, qualitative research as a whole has been constantly critiqued, and often forgotten because of the lack of consensus for assessing its quality and robustness. As a concept, rigor could be thought of in terms of the quality of the research process, that is to say, that a more rigorous research process will result in more trustworthy findings. To define rigorous qualitative research, it's necessary considered various aspects, like transparency, validity or credibility, reliability, comparability, reflexivity. Moreover, since many elements of rigorous qualitative research are shared between the variety of approaches, and often the overlap of epistemology, ethics, and procedures encourages a generic and flexible view of this type of inquiry (50).

### **Integrating Qualitative Research in Clinical Reasoning**

To obtain the best possible result, in terms of quality of life, quality of services, satisfaction from the community and citizens, need to assess the efficacy of the study intervention, not only in terms of clinical effectiveness but also the patient's acceptability of various aspects of a trial. Moreover, now more than ever, it is necessary to explore aspects concerning how people live after having adhered to a specific treatment, in order to identify the margins for improvement not only of the treatment itself but of the treatment path at a holistic level. In this context, it's possible to affirm that results of randomised clinical trials on their own, restrict the value of clinical studies, and what qualitative methods can fill this gap, entering where necessary, both before, during, and after an intervention. In a patient-centered medical perspective, it is therefore important to reinforce the idea that, if primary studies are conducted with rigor and transparency, they are harbingers of useful evidence. Moreover, if these evidences are systematically collected and analyzed in systematic reviews, then the hierarchy of evidence be-

comes obsolete, giving space to an opening of perspectives that can really help to understand the complexity of the human being, and consequently to respond adequately to the person's needs.

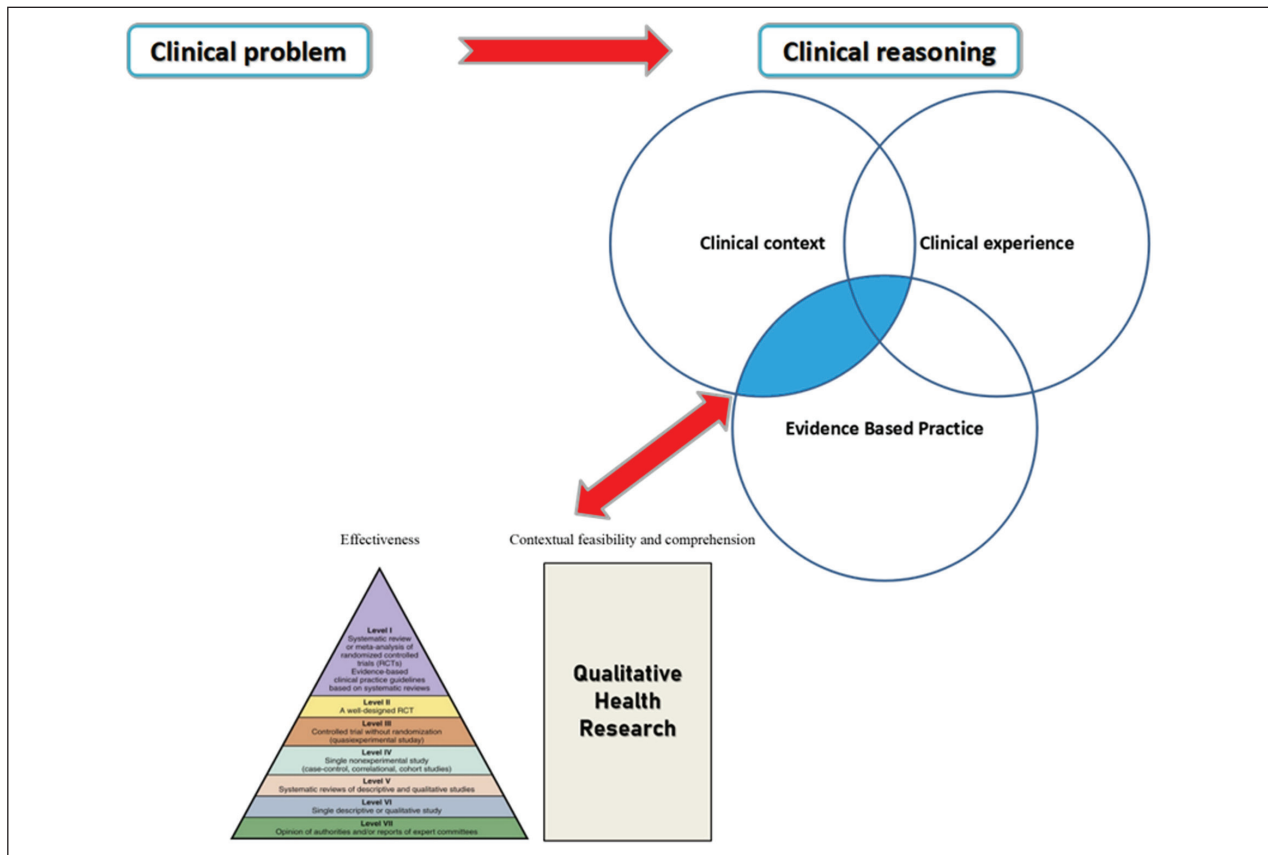
We propose to rely on the evidence that best meets the different problems that the clinician encounters in daily clinical practice. Adopting this approach, qualitative methods emerge as further points of reference with regards to contextual comprehension and contextual feasibility, offers a more complex view of the way in which problems can be tackled, allowing clinicians to have available a wide range of studies, of different types and that respond to different types of questions, in order to build in an holistic way the different solutions to be shared with the patient.

As previously stated, in the CR process, EBP is a key element, which guides the clinician to interpret and use scientific evidence to facing the health problems presented by the patients, considered single individuals, with different needs and preferences, and who live in complex and unique social contexts.

The doctor cannot be considered a dispenser of effective treatments and solutions, because therapeutic solutions cannot always be considered effective, considering that medicine is a non-exact science. In some cases people do not adhere to the treatments as expected, in others, they decide to suspend them for various reasons, or they do not understand the usefulness of the proposed treatment (this just to give any example). For this reason, we felt it appropriate to propose a model that brings out the usefulness and necessity of knowledge of approaches and consultation of the type of studies suitable for every complex situation that the doctor faces daily, considering the doctor a pivotal point about feasibility and context comprehension, and the importance of protecting the person, inserted in his/her context, with his/her desires, with his/her shortcomings in terms of health literacy, with his/her emotions and perceptions of what health actually is for them.

### **Conclusion**

In everyday's clinical practice, physicians are faced with health problems that affect people's real life who come to them for help. Therefore, they need



**Figure 4.** Integrating qualitative methods in Clinical Reasoning

to be ready, competent, and to activate processes that lead them to understand how to help the person, what type of intervention/path/treatment is needed to fulfill this request, and at the same time establish a truthful therapeutic relationship with the patient and his loved ones, in order to reach an agreement on what is best for the patient, in that context, at that particular moment in his/her life. From the previous description it seems obvious and simple that from the clinicians point of view it involves the needs to activate complex and interpretative mechanisms, to offer a high-quality service, but above all, a service that patient and relatives perceive as such.

In this scenario, clinical reasoning (CR) comes into play, doctors must be able to adopt it and decide which act- acts is-are support tool-tools for them. This process with its use and approach, is learned in university courses, since they allow the doctor to effectively face daily challenges and enables him/her to guaran-

tee the right to health to different people, in different working contexts, with various resources available.

Doctors often find themselves having to understand, interpret, and decide which treatment can solve the health problem presented by the patient. So, after collecting all the patient's information, having performed the physical examination and consulted the available documentation from the patient, the doctor finds himself having to consult scientific literature to identify goals and the best and effective therapeutic approach to be shared with the patient. This can, in some cases, help the doctor. However, this type of approach can represent a reduction of the potential that a clinician has in responding to health needs, considering that in today's society, citizens are more informed and competent, and have become real active consumers of health, namely, who own having the knowledge, skills, and confidence to manage one's health, for which often, clinicians need to adopt an integrated approach to

the problem and the individual, and share it with the patient in order to find the right approach.

While as regards the assessments concerning the patient, recognized as a unique individual some many nuances and factors belong to the real-life, such as patient's socio-cultural and economic conditions, or patient's multi-pathology condition, and depending on the clinician's experience and the context. As regards the approach to the evidence to refer to, there's a window of opportunity for improving understanding of the different phenomena that daily clinical practice faces. So, the proposal is to broaden literature's visual toward qualitative research studies, offering clinicians a wider range of studies available and useful to respond to the patient's health needs to draw in the process of identifying studies useful to respond to the health needs of individual patients. Sometimes, to consult studies conducted through qualitative methods may be useful, as they respond to the problems and questions that Randomized Controlled Trials (RCTs) aren't able to address, in terms of structure and objectives, and which may be illuminating for a better understanding of what is happening to the person who presents health problems, in a given context and period of life, adopting a real patient-centered approach.

**Conflict of interest:** Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article

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