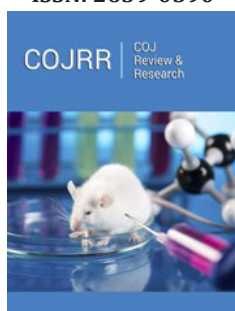# Bees and Wasps. Educational Strategies for Uncertainty in Primary Care

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Opinion

Uncertainty is the feeling of leaving behind what is organized, stable and known and of facing a hazy and threatening future. This is a constant in humanity and in all living beings. Medical uncertainty is a widespread and significant problem both at the hospital level ("wasps," specialists) and in primary care ("bees," generalists). This metaphor refers to their ecological roles: bees are generalists in pollination, feeding on many flowers, while wasps are often specialists or predators, controlling pests, although they also pollinate [1,2]. Efforts have been made at the specialist level to describe uncertainty, and educational strategies have been developed to prepare trainees for clinical uncertainty [3]. However, the "wasp" strategies used by primary care physicians to manage uncertainty have not been systematically described, and consequently, the precise educational strategies for teaching them to trainees are unclear. The common medical metaphor of "bees" versus "wasps" relates to educational strategies for dealing with clinical uncertainty through two opposing approaches in medical practice. This analogy describes different mindsets in medical training.

Often confused due to their similar appearance (all or almost all doctors wear "the white coat, the stethoscope..."), bees and wasps play very different roles in nature. Although they share certain physical characteristics, these species have behaviors, diets and contributions to the ecosystem that clearly differentiate them. Bees collect pollen, while wasps do not participate in pollination. Bees are fundamental for the pollination of crops and plants, ensuring the reproduction of thousands of plant species. Wasps, although less "communal," also have an important ecological role by acting as natural pest controllers. Bees are fundamental to the balance of the global ecosystem. More than 75% of the crops that feed the world depend, to some degree, on pollination, a process in which bees play a crucial role. Without them, many fruits, vegetables and seeds simply wouldn't exist or would be scarce and expensive. They also help maintain biodiversity, ensuring the reproduction of thousands of plant species that are part of the habitats of other animals. In other words, bees are the foundation of the system.

Bees and wasps differ fundamentally in their social behavior and aggressiveness. These differences are key to understanding why the metaphor is used to describe different approaches to uncertainty. Bees are cooperative, focused on resource gathering (pollination) and only defensive in the face of direct threats to their colony. Wasps, on the other hand, are more prone to confrontation, seeking to eliminate threats aggressively and repeatedly. The "wasps" approach is characterized by a rigid and defensive mindset toward uncertainty, which includes: 1) Reaction to threats: Like wasps that attack aggressively and repeatedly in the face of a perceived threat, professionals with this mindset view uncertainty as something to be eliminated at all costs; 2) Pursuit of absolute certainty: They focus on strict

protocols, rigidly adhering to guidelines and seeking exhaustive (sometimes unnecessary) diagnostic tests to eradicate any doubt. The "bees" approach fosters a more adaptable and collaborative mindset for navigating clinical uncertainty: 1) Collaboration and communication: Bees work in swarms and communicate to find resources and solve problems collectively.

In medicine, this translates into open communication about diagnostic doubts, teamwork and consultation with colleagues and mentors; 2) Acceptance of uncertainty: Uncertainty is seen as an inherent part of medicine, not as a personal failure. Trainees should be trained to recognize, reflect on and strategically manage uncertainty; 3) Learning from mistakes: Mistakes are considered learning opportunities and are openly discussed to improve future practice, rather than being hidden [4]. The sense of "clinical mastery" is associated with the ability to manage uncertainty in clinical practice and there are a number of "wasps" clinical strategies for this decision-making. Uncertainty is more intense in general medicine due to the biopsychosocial approach. What is the best treatment for a patient with binge drinking, angina, depression, cluster headaches, who is a smoker, has legal, financial and family problems, is religious, non-compliant, has frequent visitors, exhibits hostile behavior and lives in an isolated rural area? Classifying problems as "simple" or "complex" is only a conventional classification: all problems are always very complex and classifying them depends on where we arbitrarily stop our inquiry [5]. We can discriminate between many approaches to reducing uncertainty, as well as between different kinds of evidence. When a patient presents with a new problem, general practitioners must confront a certain amount of uncertainty regarding its assessment and optimal treatment. This uncertainty is frequently expressed in terms of probability or normative reasoning and Evidence-Based Medicine (EBM) is the most successful effort to apply statistical theory to clinical decision-making. The conventional quantitative-objective medical approach only has methods for measuring separate parts of the whole; however, in the "bees" approach, the study of the body is the study of the individual's wholeness in relation to their context [6-8]. The general practitioner can use the scientific positivist paradigm (quantitative, "objective") and employ quantitative evidence and evidence-based medicine as strategies for managing clinical care. However, far more often, you will encounter complicated and complex problems that will require a different approach than traditional sciences [5,7,9,10].

Complex or imprecise questions are difficult to answer using the conventional language of science. Thus, teaching methods for "bees" utilize stories (narrative medicine) and other qualitative methods, which are powerful tools in general practice, an environment where clinical uncertainty is the norm, not the exception. These methods focus on developing narrative competence and reflection, rather than solely on acquiring objective data. Consequently, in educational strategies for uncertainty in primary health care, in addition to the conventional language of science, the language of stories is used, which has a psychological impact that equations and graphs lack [11-13]. The "bees" teaching strategy is primarily based on the reflection-action cycle. The concept of "reflection-in-action" is described as a method for practitioners to reflect on their tacit knowledge and actions while in the midst of practice.

This process allows them to adjust their approaches, create new theories and solve unique problems creatively and effectively. Reflection-in-action is not based solely on established theories but involves active, experimental inquiry within the context of practice [8,14]. This strategy includes methods such as narrative medicine, narrative analysis, reflective writing, shared reading, real patient histories, focus groups, role-playing and mentoring. A learner-centered approach is essential. This can be achieved, first, by cautioning learners against uncritically imitating mentors perceived as role models; second, by showing them that their mentors share their doubts and uncertainties; and third, by understanding the potential for unintended messages within the learning environment. and, finally, developing policies for the recruitment and promotion of teachers that consider whether a clinical preceptor is a role model [15,16]. In summary, the "bees" approach to educational strategy tends to overcome the dichotomy between rigor and relevance in trainees, promoting a more comprehensive ("pollinating") and adaptive approach to address the challenges of real-world uncertainty in primary care.

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