THE PICO STRATEGY FOR THE RESEARCH QUESTION
CONSTRUCTION AND EVIDENCE SEARCH

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Evidence based practice is the use of the best scientific evidence to support the clinical decision making. The identification of the best evidence requires the construction of an appropriate research question and review of the literature. This article describes the use of the PICO strategy for the construction of the research question and bibliographical search.

DESCRIPTORS: nursing; evidence-based medicine; nursing research; decision making; review literature; bibliographic databases

Santos CMC, Pimenta CAM, Nobre MRC. La práctica basada en evidencias permite la elección de la mejor evidencia científica para subsidiar la toma de decisión clínica. Para lo cual, se requiere de una adecuada construcción de la pregunta de investigación y de la revisión de la literatura. Este artículo describe el uso de la estrategia PICO para la construcción de la pregunta de investigación y la búsqueda bibliográfica.

DESCRIPTORES: enfermería; medicina basada en evidencia; investigación en enfermería; toma de decisiones; literatura de revisión; bases da datos bibliográficas

A ESTRATÉGIA PICO PARA A CONSTRUÇÃO DA PERGUNTA DE PESQUISA E BUSCA DE EVIDÊNCIAS

Prática baseada em evidências é a utilização da melhor evidência científica para subsidiar a tomada de decisão clínica. Identificar a melhor evidência requer adequada construção da pergunta de pesquisa e de revisão da literatura e este artigo descreve o uso da estratégia PICO para a construção da pergunta de pesquisa e busca bibliográfica.

DESCRITORES: enfermagem; medicina baseada em evidências; pesquisa em enfermagem; tomada de decisões; literatura de revisão; bases de dados bibliográficas

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INTRODUCTION

The first randomized clinical trial (RCT) was published in the British Medical Journal in 1948\(^1\).

In the course of the twentieth century, health research techniques have been refined and clinical trials have improved. Today, there are several clinical trials available in the databases.

RCT studies have showed conflicting results in situations with similar research objectives and objects and generate doubts regarding effectiveness, fundamentation, indications and results of several health practices. These doubts motivated the construction of a new paradigm, called Evidence Based Medicine (EBM). As the EBM precepts were incorporated into other disciplines, it started to be called Evidence-Based Practice (EBP)\(^2\). The EBP previews methodologies and processes in order to identify evidence of whether a certain treatment or diagnosis is effective, strategies to evaluate the quality of studies and mechanisms to implement it in care.

This article focuses on the initial stage of EBP, the identification of evidence, which requires the adequate construction of the research question and bibliographic search.

The EBP movement simultaneously occurred at McMaster University (Ontario, Canada) and at the University of York (United Kingdom)\(^3\). Evidence is what is clear, the confirmation of a truth that elicits no doubt. Scientific evidence represents a proof that certain knowledge is true or false. In order to have scientific evidence, a previous research is necessary, conducted according to scientific precepts\(^4\).

Archie Cochrane (United Kingdom) exerted a profound influence on the assessment of medical interventions, establishing the importance of RCT in the evaluation of treatment effectiveness\(^5\). The classical definition of EBM is credited to David Sackett (Canada): conscious, explicit and sensate use of the best evidence available in decision making about patient care, added to the physician’s experience and the patient’s preferences\(^6\). EBP aims to improve care through the identification and promotion of workable practices and, at the same time, through the elimination of inefficient and prejudicial ones\(^7\), minimizing the gap between the generation of evidence and its application in patient care.

Table 1 presents the stages of EBP\(^7\-\(^11\).

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<tr>
<th>Stages of Evidence Based Practice</th>
<th>Systematic Review</th>
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<tr>
<td>1. Identification of a clinical problem;</td>
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<td>2. Formulation of a relevant and specific clinical question;</td>
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<td>3. Search of scientific evidence;</td>
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<td>4. Evaluation of available evidence;</td>
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<td>5. Evaluation of the clinical applicability of evidence;</td>
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<td>6. Implementation of evidence in the patient care;</td>
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<td>7. Evaluation of the changing results</td>
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Stages 1, 2, 3 and 4 represent the development of studies called systematic review, a fundamental research model inside EBP. Systematic review represents the use of a standardized method to synthesize data from multiple primary studies\(^8\).

Traditional literature reviews (nowadays called narrative reviews) have been criticized for a long time because the bibliographic search and study selection method is not standardized and made explicit. The results obtained through such reviews are biased, do not exhaust all the literature available about the theme and are usually inconclusive.

The search for evidence requires an adequate definition of the research question and the creation of a logical structure for the bibliographic search of evidence in literature, which facilitates and maximizes the research scope\(^12\-\(^13\).

CONSTRUCTION OF THE RESEARCH QUESTION

EBP proposes that clinical problems that emerge from care practice, teaching or research be decomposed and organized using the PICO strategy\(^7\,\(^11\-\(^12\). PICO represents an acronym for Patient, Intervention, Comparison and Outcome. These four components are the essential elements of the research question in EBP and of the construction of the question for the bibliographic search of evidence\(^7\,\(^9\-\(^10\,\(^13\-\(^15\). The PICO strategy can be used to construct several kinds of research questions, originated from clinical practice, human and material resource management, the search of symptom assessment instruments, among others. The adequate (well constructed) research question allows for the correct definition of which information (evidence) is needed to solve the clinical research question\(^7\,\(^11\-\(^12\), maximizes the recovery of evidence in the database, focuses on the research scope and avoids unnecessary searching.

Table 2 presents the four components of the PICO strategy and Table 3 presents an example of its use to construct a research question\(^13\,\(^15\).
Table 2 – Description of the PICO strategy

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<tr>
<th>Acronym</th>
<th>Definition</th>
<th>Description</th>
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<tr>
<td>P</td>
<td>Patient or problem</td>
<td>Can be only one patient, a group of patients with a particular condition or a health problem. Represents the intervention of interest, which can be therapeutic (e.g. several kinds of dressings), preventive (e.g. vaccination), diagnostic (e.g. blood pressure measure), prognostic, administrative or related to economic issues.</td>
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<tr>
<td>I</td>
<td>Intervention</td>
<td>Defined as a standard intervention, the most used intervention or no intervention.</td>
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<td>C</td>
<td>Control or comparison</td>
<td>Expected result.</td>
</tr>
<tr>
<td>O</td>
<td>Outcome</td>
<td>Not controlled: represent the textual words and their synonyms, orthographic variations, acronyms and correlates. An example of not controlled descriptors for the P component of the PICO strategy: (diabetic ulcer), (diabetic wound). Use of Boolean operators: represented by the connector terms AND, OR and NOT. These terms allow for combinations of descriptors that will be used in the search, with AND for a restrictive combination, OR for an additive combination and NOT for an excluding combination. One example of the use of Boolean operators for a combination of descriptors of the P component of the PICO strategy: P = (foot ulcer) OR (diabetic foot) OR (diabetic ulcer) OR (diabetic wound) NOT (venous wound). Combination of components of the PICO strategy for the finalization of the search strategy: after the selection of the search terms and use of Booleans operators for each of the four components of the PICO strategy, these must be inter-related in the following final strategy: (P) AND (I) AND (C) AND (O). Such final strategy must be inserted in the search box existent in the databases, so that evidence is located by means of a bibliographic search. The use of the PICO strategy reveals to be efficient in the effective recovery of evidence that the main electronic database, MEDLINE/PubMed, already offers an interface, in a beta (test) version, for the direct insertion of the four components of the PICO strategy. This interface can be accessed on http:/ /askmedline.nlm.nih.gov/ask/pico.php.</td>
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CONCLUSION

Nowadays, there exists a large quantity of many times contradictory scientific information. It is also very easy to access studies developed all...
over the world. Having access to the knowledge produced about a certain subject is essential for the development of good research and adequate clinical action. The internet and the portals of open-access journals allow for accessibility to knowledge, but this is not enough, because it is necessary to know what to select from this immense source of information and how to do it. The PICO strategy helps in these definitions, because it orients the construction of the research question and of the bibliographic search, and permits clinical and research professional, in case of doubt or questioning, to rapidly and accurately locate the best scientific information available.

REFERENCES