Synopses of primary studies

An evidence-based medicine tool

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Abstract

The exponential growth of biomedical information in recent years has made the task of keeping up to date complex, due to the massive amount of information available on the web. Today, understanding the basics of the so-called *synopses of primary studies* and their usefulness in the context of clinical practice and evidence-based medicine, is highly relevant for the daily work of students and practicing physicians. This article aims to be a tool for both newcomers to the world of evidence-based medicine as well as those who want to broaden their knowledge of the synopses of studies within the Pyramid Model of data resources. The origin of the Pyramid Model is specifically described, the matter of study synopses is explained, and information is provided on the main online sites for accessing these resources. **(Acta Med Colomb 2022; 47. DOI: https://doi.org/10.36104/amc.2022.2184).**

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Introduction

Over the last decades, a considerable amount of information has been generated in the biomedical field, which multiplies year after year, and has motivated various initiatives for organizing and synthesizing the scientific evidence. In the context of evidence-based medicine (EBM), a movement which came into existence during the 1990s thanks to a working group at McMaster University in Hamilton, Canada (1), the organization of information resources is an essential element not only for finding the best evidence, but also for establishing a hierarchical order and evaluating the quality of the body of evidence. Since 1992 (2), when EBM received its name, scientific information has not stopped growing. However, unlike in previous decades, information can be found today with a few clicks. Currently, there are many resources through which healthcare professionals can access scientific documents. However, a judicious, diligent and detailed consultation of these data sources may involve a large amount of time; thus, the task of keeping up to date poses significant challenges.

Evaluating the quality of primary studies is also challenging, which is an additional limitation if the individual lacks the capacity to critically review the literature. In addition, we must keep in mind that close to 95% of journals publish original papers (3) and, therefore, the prominent articles in various fields are widely scattered (4). Thus, over the last several years, various clinical epidemiology, EBM and information management working groups have developed strategies for synthesizing the scientific information and disseminating summaries and information systems which help people stay current on specific topics to optimize clinical decision making. Following the EBM guidelines, one of the tiers in the information resource pyramid is that of *study synopses,* an option which synthesizes relevant information from what are termed *primary studies*. The purpose of this article is to succinctly explain the 6S pyramid model of information, describe the main characteristics of *study synopses* (structured summaries) and give an account of the main online resources in this field.

Pyramid model of information

The pyramid of evidence-based information services establishes a hierarchical order which has evolved over the last few years. In 2001, to organize evidence-based information, Brian Haynes, a clinical epidemiologist at McMaster University, proposed what is known as the 4s pyramid model (5), consisting of (from the base to the apex) *original primary studies, syntheses* (Cochrane reviews), *synopses* (article summaries) and the peak, *systems,* that is, the resources which support clinical decisions through computer programs based on algorithms or computerized decision rules to suggest an evidence-based line of action according to the patients' information (6). Years later, around 2006, this model was refined to make it the 5S model. In this new pyramid, a tier termed *summaries* was added between *synopses* and *systems,* which integrated the best available

evidence from the lower tiers (7). It should be noted that lower levels of this pyramid, such as the *synopses, syntheses* and *original studies,* are focused on one aspect of clinical management (8).

The 5S model evolved over a few years to the 6S model, to which two new tiers were added. On the one hand, *study synopses* were included, this time on the second tier of the pyramid, and on the other hand, *synthesis synopses* were added, this time on the fourth tier up from the base (9). The 2009 6 S model is a very useful tool for guiding the literature search from the level with the greatest evidence (10), that is, from the peak of the pyramid. At the same time, it suggests that individual original studies represent the lowest level of information sources in this pyramid model (11). Thus, a literature search should begin at the highest tier on the pyramid and move down, passing systematically through each level until the object of the search is found, a process always guided by the research question (12). Today, this pyramid model is the one mainly used, both in medical education (13) as well as in guiding clinical decision making.

Study synopses

Study synopses are documents which are drafted according to explicit methods in order to summarize original individual studies which have already been published and provide effective information for clinical practice (14). These summaries include an evaluation of the quality of the studies and clinical commentaries. Therefore, the synopses save time, as they eliminate the need to read and analyze all the original studies. The general structure of synopses includes the title, the references of the original article, a structured summary of the original document and a commentary by an expert on the topic. This type of summary is the equivalent of what is known as *preevaluated evidence* (15) and, since the 1990s, some journals, known as *secondary journals* (16), have focused on this type of evidence. Thus, a secondary journal is one which publishes summaries of individual studies previously published in other journals (17).

Two methodological review phases are applied in *secondary journals,* which include an assessment of the scientific validity and clinical relevance of the article (18). Only articles which meet a certain methodological rigor and strict selection criteria are included (19). The first filter falls to epidemiologists and librarians who examine different biomedical journals and select the articles by certain standards and specific criteria according to the type of study (20). The second filter is the evaluation of articles on each specific topic, which is performed by clinical experts who select the articles they consider to be the most relevant (20). Besides summarizing the articles published in primary journals, the synopses provide a critical evaluation in which the topical clinical expert comments on the respective article. For daily practice, consulting synopses of original studies guarantees being a step above in methodological rigor, which may give the reader greater confidence. Since the secondary journals have a team to track clinical publications and select articles for review by expert clinicians, when a synthesis of the literature is lacking, the best option for answering a clinical question lies in primary study synopses (21).

The main resources which offer *original article synopses* are described below:

ACP Journal Club

This resource, associated with the *American College of Physicians,* began in 1991 (22) and, therefore, was the first publication to regularly disseminate structured summaries. This resource helps clinicians stay up to date on the latest evidence-based information on internal medicine and its subspecialties, and includes sections such as diagnosis, treatment, etiology, prognosis, and clinical prediction guidelines, among others. The *ACP Journal Club summarizes the evidence from more than 100 clinical journals and thoroughly evaluates the scientific rigor of these publications. This resource publishes structured summaries off the selected articles and provides a critique of each article and a score assigned by at least three evaluators in each discipline. If an article receives a score of six or more, it means that it contributes to the updating of clinical knowledge. The information, classified by topics, is found on the web site, and may be consulted by year of publication, beginning in 1991. The ACP Journal Club may be accessed at* https://www.acpjournals.org/topic/category/journal-club.

ACP Journal Wise

Affiliated with the *American College of Physicians,* this resource offers a personalized alert service aimed at researchers, residents and clinicians. The *ACP Journal Wise looks for and filters articles from almost 120 medical journals and keeps its users updated, through an alert service, selecting by specialty and specific topics, which saves time and facilitates access to information of interest. The process for evaluating the information is coordinated by the McMaster Health Knowledge Refinery*. There, those who participate in the evaluation review the medical journals to identify relevant articles which are then sent to the *McMaster Online Raters of Evidence* to be evaluated by specialty. *ACP Journal Wise may be accessed through* https://journalwise.acponline.org/.

Internal Medicine Alert

This resource provides summaries of the latest evidence in internal medicine. It is published twice a month and includes summaries of articles in this specialty and their respective commentaries by clinical experts. In addition, it presents electrocardiogram reviews which provide practical lessons for interpretation, as well as pharmacology updates. Synopses published from 1997 on can be accessed on their

web site. *Internal Medicine Alert* can be accessed through https://www.reliasmedia.com/newsletters/20/issues/77549.

Evidence-Based Medicine

This resource was first published in 1995 and belongs to the *British Medical Journal Publications Group*. It focuses mainly on general medicine, family medicine and internal medicine. *Evidence-Based Medicine* has a subscription model with a hybrid open access option. It is published bimonthly and applies strict criteria for identifying relevant evidence, in addition to including expert commentary in the assessments for added clinical practice value. *Evidence-Based Medicine* may be accessed through the following link: https://ebm.bmj.com/.

Evidence-Based Nursing

This resource began in 1998 and has a hybrid open access model; that is, subscription and open access articles. This quarterly resource performs systematic searches in a large number of international journals on health care and applies strict criteria for finding the best evidence for nursing practice. The journal requires that those who provide commentary on the evidence have a doctorate and present, in a concise text, the context of the problem evaluated by the article, a brief description of the methodology, results and conclusions, as well as practice implications. *Evidence-Based Nursing* can be accessed through https://ebn.bmj.com/.

Archives of Disease in Childhood

Published by the *BMJ Group*, this resource helps obtain answers to clinical questions in pediatrics. It is the official journal of the *Royal College of Paediatrics and Child Health* and covers topics ranging from the perinatal period to adolescence. It began in 1926 and is published monthly, but the *education and practice* edition was launched in 2004 and is published bimonthly, as is the *fetal and neonatal* edition. Its objective is to provide both pediatric trainees as well as professionals with updated information on different areas such as problem solving, best practice, evidence-based pediatrics, and diagnostic interpretation, among others. It has a hybrid open access model and may be accessed through https://adc.bmj.com/.

Journal of Pediatrics

This journal has a long history, as it has been published monthly since 1932. Although the journal publishes original papers based on excellence and peer review criteria, it also conducts critical reviews of pediatric articles through its *Current Best Evidence* section. This section of the journal offers synopses of the best published evidence, and the summaries include the research question, study design, clinical setting, participants, study results and analysis by a clinical expert in the specific topic. Users have the option of downloading these synopses in PDF format or sharing them through email or social networks. *Current Best Evidence can be accessed through* https://www.jpeds.com/content/societyCollectionCBE.

AAP Grand Rounds

Affiliated with the *American Academy of Pediatrics*, this secondary journal publishes synopses of advances in pediatrics. It reviews around 100 relevant publications in pediatrics and its subspecialties, and its goal is to perform a critical review of published studies in pediatrics. It uses the subscription model and is available in paper and online versions, with the online journal containing information published beginning in 1999. *AAP Grand Rounds* may be accessed through https://aapgrandrounds.aappublications.org/.

Evidencias en Pediatría

This is a secondary journal published in Spanish which began in 2005 and is endorsed by the *Asociación Latinoamericana de Pediatría* (ALAPE). This resource is a product of the Pediatric Evidence-Based Working Group (PEB-WG) and reviews more than 80 clinical journals both in pediatrics as well as other specialties which publish pediatric articles. It is published quarterly, focuses on an open, unrestricted access model, and performs critical reviews of articles on childhood and adolescence, following the secondary journal regulations (23). ***Evidencias en Pediatría can be accessed through*** https://evidenciasenpediatria.es/.

Evidence-Based Mental Health

In existence since 1998, *Evidence-Based Mental Health* is a resource affiliated with the *Royal College of Psychiatrists*, the *British Psychological Society* and *BMJ*. This journal uses a hybrid subscription and open access model. It focuses on all aspects of mental health, with quarterly publications, and updates mental health researchers and practitioners through clinical reviews and studies in this field. *Evidence-Based Mental Health* may be accessed through https://ebmh.bmj.com/.

UpToDate

This resource celebrated its 25th anniversary in 2017 and gave a heartfelt tribute to its founder, the United States nephrologist, Burton Rose. Today, ***UpToDate*** provides information to support clinical decision making and answer clinical questions. It is an important resource for staying current and covers a large number of clinical topics, including adult and pediatric topics, and even a graphics option. ***UpToDate*** may be accessed through https://www.uptodate.com/login.

Bandolier

This resource began in 1994 as a printed publication related to evidence-based health care. The paper version was discontinued in 2007, but the 1994 through 2007 editions can be found on its website. The online version of ***Bandolier*** began in 1995 and has become a great resource for health-

care professionals as well as for patients and caregivers. ***Bandolier*** is focused mainly on information obtained from systematic reviews, meta-analyses, clinical trials and high-quality observational studies. ***Bandolier*** may be accessed through http://www.bandolier.org.uk/index.html.

Secondary journal finder

A secondary journal finder known as *Publicaciones Secundarias en Español* (PSE) has existed for several years. This finder's design is based on Google technology and includes different search resources such as *Evidencias en Pediatría, Atención Primaria al Día, JBI COnNECT España, Revista Española de Medicina Intensiva, Gestión Clínica y Sanitaria and Nefrología Basada en la Evidencia*, among others.

Conclusions

Scientific information organization systems have evolved notably over the last few years and, among the models designed to prioritize the body of evidence, the 6S pyramid provides very useful resources. The primary study synopses tier thus represents an important step in information synthesis, as these summaries condense the findings of primary studies and perform a critical review with expert commentary. Given the complexity of reviewing the whole body of evidence on a specific topic published each month around the world, this type of resource clearly saves time for healthcare professionals and is an additional tool with which students and practicing physicians can access the results of scientific studies and, in this way, connect the evidence to clinical practice.

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