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TÍTULO: Definición de Habilitación, Competencias Técnicas y Metacompetencias: análisis conceptual de tres contenidos curriculares.

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RESUMEN: Los recursos humanos competentes son uno de los temas importantes en el mundo profesional y dado a que la profesión médica es efectiva en la salud del individuo y la comunidad, su fuerza laboral y sus capacidades han sido ampliamente discutidas. En esta investigación, con énfasis en el papel y la importancia del sistema de educación médica en el desarrollo de la fuerza laboral competente y profesional se determina el enfoque de Walker & Avant para el análisis de conceptos y tres grupos de competencias. Se presenta una nueva visión para los planificadores educativos mediante la cual pueden desarrollar un plan de estudios médico integral para educar a los médicos competentes en el futuro.

PALABRAS CLAVES: definición; habilitación; competencias técnicas y metacompetencias; educación médica.

TITLE: Defining Enabling, Technical and Meta competencies: three curricular content concept analysis.

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ABSTRACT: Competent human resources are one of the important issues in the professional world and given that the medical profession is effective in the health of the individual and the community, its workforce and its capabilities have been widely discussed. In this research, with an emphasis on the role and importance of the medical education system in the development of the competent and professional workforce, Walker & Avant's approach to the analysis of concepts and three groups of competences is determined. It presents a new vision for educational planners through which they can develop a comprehensive medical curriculum to educate competent physicians in the future.

KEY WORDS: defining; enabling; technical and meta competencies, medical education.

INTRODUCTION.

Today, we are witnessing very rapid changes in the business world, and those who are now entering the business market in various fields face numerous challenges, including reducing employment opportunities, reducing job security, rapid technological change, and increasing individual responsibility to match themselves with growth of a body of knowledge related to their profession, and keep their skills and capabilities at an acceptable level (Coffey, 2016).

On the other hand, many institutions are concerned about the capabilities of their own professionals workforce (Marock, 2008). Harp also acknowledges that graduates entering the business environment do not have some skills and they are inefficient in others (Harpe, Radloff, & Wyber, 2000). Fallow and Steven emphasize on the important role of higher education institutions and they are responsible for developing professional skills in their learners and create job opportunities in their graduates.

They should help their learners to manage and improve their capabilities (Fallows & Steven, 2000). Therefore, we find that employability is a concern for educational systems, individuals who are supposed to be employed as professionals as well as the employer's systems (Cox & King, 2006). Therefore, in the recent UK statement related to the national leadership and labor force federation in National Health System (NHS), a question is raised: What kind of education and training can help the NHS achieve its goal of providing more efficient services? (Thomson & Sanders, 2001).

Based on existing evidences, outcome-based education is the best approach, and competency-based education is preferred strategy for planning and quality assurance of medical education (Frank, 2010; Harden, Crosby, & Davis, 1999). It is clear, that before planning and policy-making for this strategy, it is necessary to identify and define the main element of "competency". Therefore, different institutions and researchers have provided definitions for this concept, but with scrutiny in all of them, we see that competency has been defined as a single concept in spite of its broad sense, although these definitions are comprehensive, they cannot meet the needs of future educational policymaking and planning.

Therefore, in this research, we tried to consider different dimensions of competency, and to find a analytical definition for each part by dividing the competency into its various types.

A literature review.

In an outcome-based education approach, the focus is on the outcome instead of the process, what learners must learn in each course, and learners must demonstrate they can use what they have gained during each course. For this goal to be achieved, the competency-based strategy has been widely accepted in recent decades (Brownie, Bahnisch, & Thomas, 2011; Frenk, Chen, & Bhutta, 2010).

The concept of "competency" is the core of a competency-based strategy. Researchers tried to define and clarify this concept and looked at it from different angles over the past decades (Gonczi, 1994). Some pointed out the difference between competence and competency who often consider the former to be an aspect of the profession that one has to do and the latter as an approach that one takes to carry out that profession (Morcke, Dorman, & Eika, 2013; Scott, 2008). Others have mixed up competence and performance. For some, performance is considered to be the opposite of competence, the former represents what the individual can do in real condition, and the latter represents the potential ability of a person in an ideal situation (Norman, 1985). For others, competence like performance is visible (Castillo, Caruana, & Wainwright, 2011). Discussions and definitions of competency have become more and more over the years. In the widespread literature review of Watson and his colleagues at 2002, some consensuses have been obtained about the concept of "competency" including its definition and measurement (Watson, Stimpson, Topping, & Porock, 2002).

In the literature, there are three common approaches to defining and measuring competency. Mac Multan summarized these definitions and approaches in 2003: 1. Behavioral approach: this competency-based approach is defined by describing the visible and measurable behavior, and successful performance is achieved when the individual can carry out the main skills by which the success rate is measured. 2. The general approach: this competency-based approach is in the form of very large clusters of abilities (such as knowledge, critical thinking Skills), that when combined, create the expert performance. The role and significance of the performance context and conditions are not taken into account, and it is assumed that these abilities are implemented in the same way under different conditions, 3. Holistic approach: in this, competency approach is considered as a set of knowledge, skills, and attitude that integrate with the context and the circumstances in which one operates, and it considers ethical elements and values as parts of performance (McMullan et al., 2003).

Dreyfus's model of skill acquisition addresses the elements of all three approaches and describes and explains competency according to them, depicting them as developmental stages from novice to expert (Dreyfus & Dreyfus, 1980). This competency approach is defined with various titles as a multidimensional construct that involves the complex interaction of cognitive functions associated with the collection of information, the processing of that information for translating them into acts that result in an enactment in the form of know-acting (Lasnier, 2000) or problem-solving.

Competency should be considered an integrated concept because it has both intelligent elements and acts that must be performed at a certain level and the conditions under which the acts are implemented (Roegiers & Ketele, 2000). According to the definition in the research conducted by the author in 2015 through the concept analysis method, competency was "the ability to carry out an activity that consists of a set of knowledge (encoded applied knowledge and tacit knowledge based on experience), (technical & cognitive) skills, and perceived ability. This ability is habitual, stable, task-dependent, visible and measurable, knowledge-based, and context-based and it is the main component of the job. The definition of competencies leads to the establishment of top performance criteria, forms a framework for training based on future job performance, and a foundation for providing certification and strengthening social accountability. Competencies are developed through teaching and supervised training, and also real experience with reflection"(Yazdani & Farnad, 2016).

consider how multidimensional, multifactorial, and multi-contextual concept of "competency" turns it into a complex phenomenon. Some models for competency development were presented by examining the literature related to outcome-based education that included a variety of competencies, such as Graham Cheetham & Chivers competence model, in which four key components of professional competency were presented:

- Functional competence: The ability to perform some job-based tasks that effectively address specific outcomes. This competency has separate skills and emphasizes their use to achieve specific outcomes.
- Personal competence: the ability to adapt appropriately, observable behavior in work-related situations.
- Cognitive competence: Knowledge about the proper work and the ability to effectively apply this knowledge in practice.
- Ethical competence: proper professional and personal values and the ability to judge correctly based on them in different situations in the workplace.

The generic level of these four main components is some meta-competencies that include skills of communication, problem-solving, creativity, analysis, and self-promotion (Cheetham & Chivers, 1996).

Winterton and Delmar in their article “what is competence?” claimed to have provided a comprehensive model of professional competencies that includes four sets of capabilities and competencies related to each other. This framework includes cognitive competence, functional competence, social competence and meta-competencies (Le Deist & Winterton, 2005).

Accreditation Council for Graduate Medical Education (ACGME) has also provided six main competencies for a physician, including:

- Patient care.
- Medical knowledge.
- practice-based learning.
- System -based practice.
- Professionalism or professional commitment.

- Interpersonal and communication skills (ACGME, 2015).

Given that the literature refers to different types of competency, it is evident that these types do not necessarily have the same characteristics and we cannot consider a general definition for all of them.

In this research, we will present a general category of "competencies" according to the literature and, we will have an analytical definition for each of them that includes unique defining attributes.

Method.

Walker and Avant define concept analysis as a strategy for measuring the characteristics or attributes of a concept. They emphasize that concept analysis should never be regarded as an end product, and the purpose is to achieve the existing definitions. This process is the goal-oriented and methodological and seeks to clarify features related to the concept.

The stages of the concept analysis defined by Walker and Avant, are as follows:

- Choosing a concept.
- Determining the purpose of analysis.
- Identifying all uses of the concept.
- Defining attributes.
- Identifying a model case.
- Identify antecedents and consequences.
- Defining empirical referents (Walker & Avant, 2005).

In this study, based on Walker and Avant's belief in the dynamic nature of the concept analysis and its desire to evolve the definitions of concepts, Walker & Avant approach to concept analysis was used to review the concept of competence with a more holistic and practical approach.

Data selection.

To obtain information resources for concept analysis, we searched the databases of Scopus, Medline, Web of science, and Eric, with the following keywords and the result of this search was 1973 documents. In the first stage, by reviewing the title and abstract, 178 documents were selected for further investigations, among which 148 documents were obtained after eliminating duplicates. After reviewing all these articles, we extracted definitions from twelve documents, and backward search method was used for many other cases. Ten other documents were added and a total of 22 documents were used.

- Key word 1: (concept OR conceptualization OR model) AND ("generic competencies" OR "overarching competencies" OR "general competencies" OR "meta competencies") filetype: pdf
- Key word 2: allintitle: ("generic competencies" OR "overarching competencies" OR "general competencies" OR "meta competencies") filetype: pdf
- Key word 3: (medicine OR medical) AND ("concept analysis") AND ("generic competencies" OR "overarching competencies" OR "general competencies" OR "meta competencies") filetype: pdf
- Key word 4: (medicine OR medical) AND ("concept map" OR conceptualization OR "theoretical model") AND ("generic competencies" OR "overarching competencies" OR "general competencies" OR "meta competencies") filetype: pdf
- Key word 5: (medicine OR medical) AND ("concept map" OR conceptualization OR "theoretical model") AND ("generic competencies" OR "overarching competencies" OR "general competencies" OR "meta competencies") filetype: pdf
- Key word 6: "definition" AND (medical education) AND ("concept map" OR conceptualization OR "theoretical model") AND ("generic competencies" OR "overarching competencies" OR "general competencies" OR "meta competencies") filetype: pdf.

Findings.

Explanations will be presented based on the steps mentioned in the concept analysis of Walker and Avant approach:

- **Choosing a concept:** Given the emphasis on the above, the concept of "competency" has been considered as the core concept.
- **Determining the purpose of analysis:** The purpose of this concept analysis is to examine the various dimensions of "competency" and determine its general types and provide an analytical definition for each in the general medical profession.
- **Identifying all uses of the concept:** By accepting the concept of "competency" in the education literature, there are various uses for it. The distance between education and practice can be determined, and the progressive improvements in professional education can be done. The result will be graduates who provide not only proper care and treatment but also have essential capabilities for complex treatments in difficult situations.

The American Institute of Medicine has identified several key competencies for the health profession, including working in interdisciplinary teams, providing patient-centered care, applying evidence-based medicine, using information and quality improvement (Greiner & Knebel, 2003). The National Council for State Boards of Nursing emphasizes the role of performance in the context of healthcare to apply the concept of competency at all functional levels (NCSBN, 2005). and ACGME focused on the structure and assessment of competency, as well as the determination and measurement of learning outcomes or competency (ACGME, 2015).

Krenz suggested that all the consequences of the profession should be classified which can be a foundation for competency-based curriculum. He used the specific implications of the nursing field in the curriculum reform and wrote the competence statement that illustrates what nursing students should follow in the care. By analyzing this syllabus, this approach adds transparency and

direction to the curriculum (Krenz, 2003). Reising & Devich also suggested that a progressive assessment of the hard skills set is a way of measuring competency. Continuing assessment criteria in all semesters should include critical thinking, prioritization, health assessment, psychomotor skills, and communication skills (Reising & Devich, 2004).

The American Institute of Medicine suggested that all people who have obtained a health professional license should have the capabilities required to take care of the patient as defined by the core competencies. The capabilities are measured through technical competences, patient assessment, and evaluation of patients' outcomes and other evidence-based methods. The institute also announced that, those who receive the license are required to maintain the relevant competencies throughout their professional life by implementing the core competencies in the health services (Greiner & Knebel, 2003).

The National Council for State Boards of Nursing also announced that the most common way to renew work license is right implementation of the professional competencies, and introduced continuing education as a way to achieve this goal (Reising & Devich, 2004). In nursing performance model, continuing and dynamic competencies are implemented and it requires to determine, train and evaluate the competencies required in different environments and times (Yoder-Wise, 2006).

As previously stated, there are different classifications for competency in the literature, but it is important to provide a kind of division which first is based on specific principles, and second, these principles are understandable and transferable to the educational environment and workplace. Among such divisions, we can refer to division of Delmar and Winterton. First, they divide competencies into two large groups, which are competencies either related to the functional and technical aspects of the profession or personal characteristics, and each of them can also be

divided into mental (conceptualization) and functional competencies. Table1 (Le Deist & Winterton, 2005).

	occupational	personal
conceptual	Cognitive Competencies (Knowledge).	Meta Competencies (Motives and Traits).
operational	Functional Competencies (Skills)	Social Competencies (Attitudes and Behaviours)

Table 1: Le Deist & Winterton, 2005.

- **Determining the defining attributes:** Since there were many main infrastructures for each of the three main concepts (table 2), we considered domains in terms of the nature and function of the concepts to establish a distinct boundary among the main concepts. These domains are as follows (for simplicity in understanding the nature of each domain, we define each in terms of the concept of "meta-competency," and the definitions and related domains apply to the other two concepts):
 - ✓ **Character:** It is like an adjective for identity; it describes how we call identity a meta-competency.
 - ✓ **Content:** It constitutes the meta-competency by putting next to each other, and it is components of meta-competency, and their gathering must make meta-competency.
 - ✓ **Result:** something comes about from the application of meta-competency to acts which is the result we are looking for.
 - ✓ **Development:** the ways by which meta-competency can be developed, information was grouped, and the boundary among concepts was defined.

Overarching Curricular Concepts ↓	Definitional Areas ↓			
	Characteristics	Content	Results	Development
Overarching Competencies				
Enabling Competencies	Overarching, Enabling, prerequisite,	Communication, Teamwork, Self-management	Potential for Actualizing Technical Competencies	Standalone Courses, Integrated Curriculum, Progressive Engagement in Community of Practice
Technical Competencies	Overarching, Principal, Professional	Prevention, Diagnosis, Treatment, Referral, Follow-up	Successful Job Performance	Standalone Courses, Integrated Curriculum, Progressive Engagement in Community of Practice, Deliberate Experience
Meta-competencies	Overarching, Higher Order, Professional, Quality Improving	System Based Practice, Practice Based Learning, Value-based Practice, Patient Centered Practice, Risk Management, Error Management, Utilization Management	Continuing Top Performance, Quality Attributes for Performance	Standalone Courses, Integrated Curriculum, Practice in Zone of Complexity, Practicing Unfamiliar Problems in Unfamiliar Settings

Table2: Defining attributes.

- **Identifying a model case:** A model case is an example of the concept that contains all the defining attributes. The table below expresses the case and defining attributes.

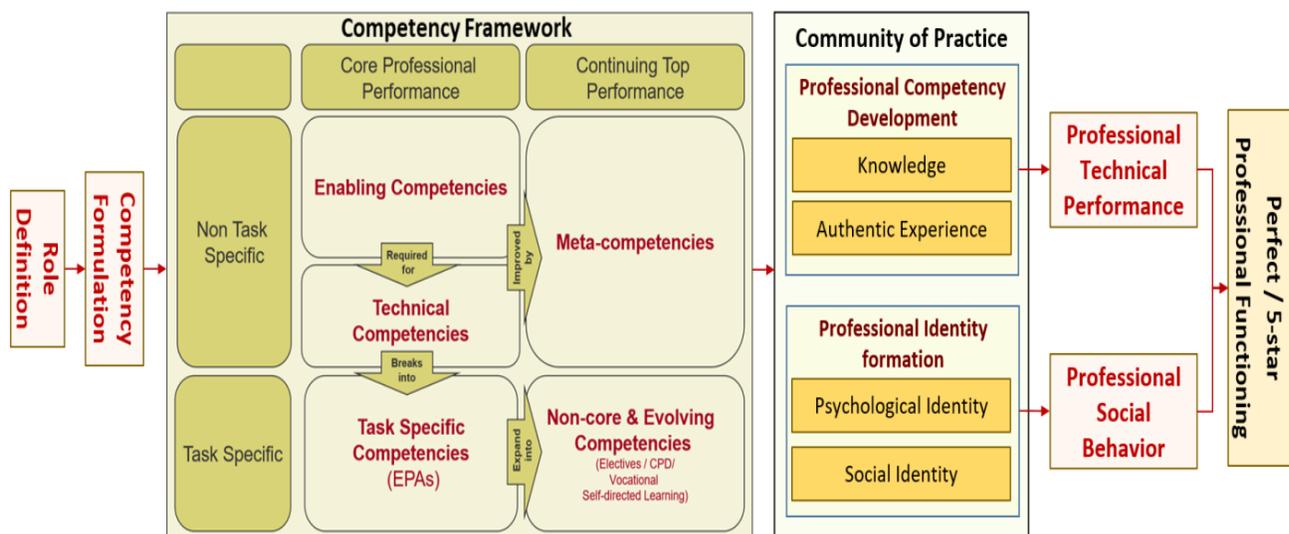
Self-management	A doctor whose grandmother recently died returns to his work environment to carry out his professional duties while constantly trying to maintain his morale.
Communication	A patient visited him and complained about the cough, sense of weakness and lethargy. The doctor asked him about the type of cough and whether it is accompanied by sputum, and the patient complains of persistent coughing accompanied by sputum and sometimes blood. The doctor asked him about the involved areas, and the feeling created recently due to the illness. The patient stated a sense of weakness and chest pain. The doctor focuses on the patient's tuberculosis in terms of the symptoms and statements. Therefore, he gave the patient a brief explanation about the tuberculin test, its causes, and consequences that may occur for up to 48 hours and did the test for him. The patient refers after 48 hours, and the doctor diagnoses tuberculosis in him with high probability.

Referral	He asked a series of blood tests and chest X-rays for the patient.
Teamwork	The doctor asked a health worker to create a medical record for the patient and provide further explanations and get advice from a doctor during the care process if any question.
Diagnosis	In the next visit, the patient comes with the test result, and the active tuberculosis is definitively diagnosed.
Patient Centered Practice	The physician provides explanations for possible treatments and the length of each of the treatment regimens, their costs and insurance coverage and provides information on the patient's financial situation as well as living conditions. The patient is worried about the cost of treatment.
Practice Based Learning	Accordingly, the physician will search for resources and study medical methods.
Utilization Management	He evaluates the effectiveness of each treatment and their expense and chooses treatment regimens with the lowest cost and reasonable effectiveness.
Value-based Practice	Finally, depending on the patient's acceptance, he chooses a treatment regimen.
Treatment	He describes the types of medications and how to use them.
System Based Practice	He explains supports provided by the center in the event of a problem and describes the times when staff can respond to the patient and how to communicate with them.
Prevention	He provides information to patients about how to take care and prevent the spread of tuberculosis Bacillus in the environment when coughing and prevention of the spread of disease.
Follow-up	He asks a health worker to call the patient each week.
Error Management	Record the results in the patient's record.
Risk Management	Always check the information and inform the doctor in case of any inconsistency

- Identifying antecedents and consequences:** The following figure is used to understand the antecedents and consequences of the concept of competency and also to illustrate the different competencies and their relationships. Before we develop the list of competencies required for each job, what we need is a competency framework that is achieved through a role definition.

As we know, a set of competencies is required to perform a job and the author has considered them as a model inspired by the Winterton and Delmar but more comprehensive, in which the relationships among competencies are represented, the professional performance is either in the form of core professional performance or continuing top performance, and each of these professional performances can be specific or non-specific to a professional task, the enabling competencies are necessary to perform the technical competencies. Technical competencies in the field of medicine are entrusted professional activities (EPAs).

Technical and enabling competencies are improved by applying meta-competencies, and quality attributes are added to the professional performance in this way. Another group of competencies that depends on the individual's interest in various occupational fields is called non-core competencies that we do not have a macro educational plan for their development and one can learn and strengthen them by self-directed learning. After receiving and applying these three groups of core competencies, including enabling, technical, and meta-competencies, and we need a community of practice to professional competency development that improved professional technical performance, and professional identity formation that improved professional social behavior. So the perfect/5-star professional functioning is expected.



- **Analytical definition of concepts**

Analytical definition of the enabling competencies.

"It is inclusive and comprehensive, which is an introduction to other competencies and makes the person capable of performing them. Communication skills, teamwork and self-management are examples of this competence. It is a potential ability of the individual that predisposes to technical competencies. It is developed through specific course-based training, integrated curriculum, and progressive involvement in functional societies".

Analytical definition of the technical competencies.

"It is an inclusive and comprehensive component of the profession. Prevention, diagnosis, and treatment of the disease, as well as the referral and follow-up of the patient are examples of this competence that lead to the successful implementation of job-related duties. It is developed through specific course-based training, integrated curriculum, progressive involvement in functional societies and targeted practices".

Analytical definition of meta-competencies.

"It is inclusive and comprehensive, which relates to the top levels of professional performance and associates quality traits to the performance. For this purpose, system requirements-based performance, performance-based learning and promotion, value-based performance, patient-centered performance, risk management, error management, and cost-effectiveness management are some of the examples that ultimately lead to continuing top performance, and it is developed through specific course-based training, integrated curriculum, performance in complex environments and unfamiliar problem-solving in unfamiliar environments".

CONCLUSIONS.

The concept of competence is one of the basic concepts in the outcome-based education system and one of the main categories in the workplace. Understanding its types and planning for its development require a lot of studies. In this research, we tried to introduce and define the types of competence which are curricular. Further studies are needed to understand its implications in the medical field better.

For this end, and a thorough understanding of the examples, we will try in future research to provide a taxonomy of competencies and a comprehensive list. Therefore, all Medical-related disciplines can use the list based on their interest and needs, select implications and provide proportional educational planning.

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