



ENHANCING PHYSICIAN PREPAREDNESS: CURRICULUM REFORM THROUGH PROFESSIONAL COMPETENCIES

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ABSTRACT:

Introduction: While professional skills are crucial for medical practice, they often receive insufficient attention in medical education. This study advocates for a curriculum design centered on professional competencies in internal medicine and clinical pediatrics, aiming to better equip medical students for their future careers.

Development: In this review the inadequacies of current curriculum structures are discussed, emphasizing the need for reforms to align with students' career aspirations through skills-based training. The benefits of on-the-job training in clinical pharmaceuticals and internal medicine are explored in depth, illustrating their pivotal role in refining clinical acumen. Furthermore, the endorsement of skills-based training by reputable global organizations underscores its significance in enhancing the quality of medical education.

Conclusions: By prioritizing professional skills in curriculum design, medical students can achieve superior academic outcomes and graduate with heightened readiness, competence, and societal engagement. This approach prepares future physicians to navigate the complexities of healthcare delivery and enables them to effectively fulfill their social mandate within the healthcare system.

KEYWORDS: internal medicine, clinical propaedeutics, on-the-job training, clinical approach, and professional competency.

INTRODUCTION:

Table 1: Repercussions of the Crisis in Clinical Approach

| Repercussion | Description |
|--|---|
| Deteriorating Relationship between Doctor and Patient | Gradual decline in the quality and trust of the doctor-patient relationship |
| Increasing Disdain for Questioning and Physical Examinations | Growing lack of importance placed on questioning and physical exams |
| Overuse of Medical Technology in Diagnostic Procedures | Excessive reliance on medical technology leads to overdiagnosis. |

Table 2: Goals of Medical Education

| Goal | Description |
|---|---|
| Prepare students for public health careers. | Equip students with knowledge, values, and abilities to address public health issues effectively. |
| Streamline training with a focus on Plan "D." | Strengthen education with a focus on Plan "D," emphasizing skill development and on-the-job training as the core structure of an educational process. |

Table 3: Key Concepts in Clinical Education

| Concept | Description |
|-------------------------------|--|
| Mastery of Clinical Technique | The primary objective of practical training is to emphasize foundational behavior in the medical field. |
| Integration of Work and Study | Emphasizes the fusion of work and study through work-research, supporting the realization of education's mission |

Table 4: Characteristics of Ideal Medical Professionals

| Characteristic | Description |
|----------------|---|
| Revolutionary | Embraces innovation and seeks to advance medical knowledge and practices |
| Cultured | Possesses a well-rounded understanding of various cultures and societal norms |
| Competent | Demonstrates proficiency and expertise in medical skills and knowledge |
| Autonomous | Capable of making independent decisions and taking initiative in patient care |
| Creative | Able to think outside the box and develop innovative solutions to medical challenges |
| High Ideals | Upholds strong moral and ethical principles in both professional and personal conduct |

Table 5: Components of Clinical Propaedeutics and Internal Medicine

| Component | Description |
|------------------------|---|
| Clinical Propaedeutics | Focuses on foundational clinical skills, diagnostic methods, and patient examination techniques |
| Internal Medicine | In-depth study of diseases, their diagnosis, treatment, and management in adult patients |

Table 6: Organizational Structure of Educational Training Process

| Component | Description |
|---------------------|--|
| Skill Development | Emphasizes the acquisition and refinement of essential clinical skills and medical knowledge |
| On-the-Job Training | Provides hands-on experience and practical exposure in natural clinical settings |

DEVELOPMENT:

Reasonable adjustments are necessary since the educational paradigms and mechanisms today are inadequate. Thus, from the authors' perspective, curriculum design according to professional skills represents an urgent and complicated curriculum transformation, downsizing, and improvement process, which the Department of Public Health authorities must immediately reflect. Education medicine can then help optimize the higher education standard for learners and educators, ensuring that new outcomes surpass the status [4].

The diagnostic interview and the visit are essential to an internal medicine service. Both are grounded in the profession's methodology and provide ideal settings for fostering the development of skills-based training through applying the clinical method beginning at the university level and for consolidating the body of knowledge (knowledge, know-how) to be used from the outset of a career. Modern healthcare professionals must understand transfer, transcending, and attitudinal knowledge (or knowing how to be) [5].

The condition of the doctor training paradigm at the moment

Rapid advancements have seen the globalization of science and technology as an unavoidable requirement. Technology has played a significant role in the exponential advancement of medicine as a science. The critical components of the clinical method, which applies to all healthcare practitioners, not just internal medicine specialists, remain the doctor-patient connection, questioning, and objective assessment. Work education, the therapeutic approach, and professional skills must thus be integrated to save this technique from the global crisis that has threatened it since the beginning of the 1960s [6].

As a result of the systemic structure of this process and its systematization, the flaws of the existing medical career training model could be emphasized from an ontological and praxiological standpoint. Among the flaws found, some planning elements are particularly noteworthy, including deficiencies in the curriculum design, given that each content topic's objectives and skills system are thoroughly created, Not so much the value structure that restricts humanistic learning. Additionally, the development of values is not encouraged in the political and extracurricular domains [5, 7].

The dynamics of the educational process are primarily responsible for the substantial cognitive burden associated with skill development. The systematic assessment of training goals in the medical field lacks a methodology. The insufficient integration of significant higher education processes for the growth of professional values in the career of doctors through work education stems from a lack of knowledge about teaching methodologies that support the systematization of values in units with primarily educational content. Inadequate utilization of the primary and secondary care levels' human capital potential through a unified, flawless curriculum, making value formation genuinely collaborative. Since the professional development process does not integrate the acquiring of knowledge, skills, and values circularly, with a systemic approach, and in perfect balance, it remains an incomplete mechanism despite its dynamic and organized activity and integration between its dimensions [8].

The faculty's belief that developing moral principles is an extracurricular activity, which influences the subject's methodological preparation, limited pedagogical preparation regarding the necessity of curriculum transformation, and irregularities in the professionalizing approach that ought to characterize the university's educational organization forms are all related to the faculty's preparation and present a barrier to the faculty making the required changes to the medical career structure [9].

Lastly, we must address the elements related to the faculty's preparation. This clarified the conflict between the opportunities provided by the wide-based pedagogical model in higher medical education, which is backed by both the development of human capital and broad fundamental training in addition to competence-based training for the medical field. The professional abilities that the present medical university demands for the graduate to successfully perform and master the modes of professional action enable him to employ them to resolve the community's primary health

problems (the fundamental component of your profession). Therefore, to ensure improved quality indicators, it is necessary to consider skill training in university clinical medicine. To advance in your medical career, you should develop methods to systematize and integrate society's core values into the medical sciences through interdisciplinary courses like Clinical Propaedeutics and Internal Medicine. This will enable general practitioners to receive comprehensive training [10].

The global training process, on the other hand, consists of three main components: educational, developmental, and instructive. Education must first equip students with the knowledge and abilities critical to their work. Additionally, from the start of the degree program, the student needs to be introduced to the subject of his trade to understand the critical connection between his actions and this object. This is referred to as the developer dimension, the core of which is the connection between work and study. For young people to have the power to change and advance society, they must also be ready to live in one where they are actively involved. This highlights the significance of the educational component, which considers how society, the family, and schools work together to shape a person's values and personality. These three essential components of professional training form a dialectical unit that aims to fully integrate the professionals and prepare them for successful societal performance [11].

These days, the two guiding principles that form the training process's common thread are the relationship between study and work and the oneness of instruction and education. The first articulates the inextricable connection between the instructive and educational components. It connects the cognitive with the axiological, motivational, and social commitment aspects in a dialectical manner using a systemic approach. The training components must be designed with a comprehensive perspective on the subject matter and harmoniously integrate the epistemic component of the knowledge system with the development of the young person's abilities and values. The aforementioned refers to the logical integration of the didactic and educational dimensions through a set of knowledge: "knowing" (knowledge), "knowing how to do" (skills), and "knowing how to be" (values). Pursuing professional performance requires a strong foundation in science, technology, and humanities, returning us to the "competence" concept [12].

Based on a Martian principle, the second guiding concept is the connection between study and work. Its core in university courses is to ensure, beginning with the curriculum, the mastery of professional action methods through skills to provide the training of professionals suited to their performance in the company [13].

INSTRUCTION IN SKILLS:

There is a wide range of interpretations for the word "competition," which is why your definition is so contentious. Competency-based training gained popularity in the 1970s in nations that had adopted it in one form or another, including Canada, the United Kingdom, Australia, Germany, Spain, Mexico, Colombia, Peru, and Jamaica. Its name originated in the market world because of the need to achieve more excellent results in exploiting and training human capital. The idea of "competence" started to be reinterpreted in the context of regional and global discussions on concerns about education quality in the late 1980s and early 1990s. Determining what constitutes "skills" is challenging [14].

Many different approaches have been taken in pursuit of this goal. As a result, the phrase has been discussed from various viewpoints, including corporate, curricular, social, behavioral, psychological, and occupational. Following the systematization of definitions, the definition of "professional competence" adopted by these researchers assumes that it is a complex psychological configuration that integrates and combines, in strict unity, individuals with cognitive, metacognitive, motivational, attitudinal, axiological, ethical, and phonological components. Functional, which self-regulates practical and accurate performance in a particular endeavor field, aligns with the socially desirable performance model developed within a specific historical setting. It is thought that the development of professional skills should be an open and adaptable process in all competence-based training [15].

The design of health sciences programs must prioritize improving the caliber of professionals who receive training and possess the necessary information, skills, and values to recognize, prevent, and resolve community health issues. Additionally, these curricula must be pertinent to the demands of the current healthcare system. The various functions developed in the professional model in each educational area or scenario and the skills the student acquires through work training activities are identified above all other specific academic results by skills in the training field. Remember that when applied in social practice, all student capabilities, knowledge, skills, and values become competencies. It is impossible to comprehend skills outside of the precise context in which they are employed; in other words, skills cannot be isolated from the unique circumstances of the instructional scenario in which they are demonstrated. Skills are acquired throughout the whole training process [16].

In conclusion, professional skills have evolved into a dialogue tool between education and employment because they uphold the requirements that every curriculum project be pertinent to the social mission and that its professional profile be consistent with professional performance. This leads people to believe that the training they receive from professional skills benefits their overall development and increases their chances of being integrated into the modern society in which they live. Therefore, the term "competence" has a very dynamic meaning: it refers to the activation of several mechanisms, processes, and phonological resources that regulate an individual's performance in particular situations and trigger an effective action in them, in line with a problem that requires this response with maximum effectiveness in its evaluation and ethical-axiological commitment [17].

Rather than being a property of the subject that possesses it or not and which guarantees success in the activity. This variety of arguments leads us to observe that nearly all definitions of skills reveal them as regularities: having values, knowledge, and abilities (knowing, knowing how to do, and knowing how to be). Furthermore, they become a contextualized, integrative, all-encompassing, dynamic, mobilizing, and flexible category; they imply transfer capacity and allow gradations. They also reveal themselves through effective performance in professional performance, which gives them an eminently practical character that can only be evaluated in action [18].

Since prestigious international organizations like the World Health Organisation and the Pan American Health Organisation, among others, are pushing competency-based training, it is becoming increasingly necessary. As such, the Ministry of Public Health, the competent national authority, should think carefully about this issue within the context of universalization. The author contends that one of the new paradigms in higher education is the improvement of curriculum transformations based on professional skills, specifically in medical training since all of this can enhance the standard of university training for faculty members. To support a person's social and professional needs, skills training is an all-encompassing, integrative proposal that is sophisticated, contextualized, and grounded in a body of theoretical references [19].

It aims to equip people with the knowledge and skills to undertake, share, transfer, and transcend situations and attitude-forming or knowing-how-to-be. On the other hand, professional skills cannot be viewed as a fleeting trend or an up-and-coming initiative in the healthcare industry since they represent a problematic process of curriculum change and scaling that calls for a critical mass of leaders and cannot be handled editorially. The field in which one is sufficiently competent, with the goal that a professional skills-based curriculum enables achieving outcomes beyond conventional ones [20].

As a result, developing curricula demands a high level of specialization, inventiveness and imagination, humanism, experience, and a feeling of community within the setting where the graduate will operate. It is, therefore, neither to be understood as a fleeting, accidental, or meticulous act nor as the product of the ideas and experiences of some "eventually" assigned to its preparation [21].

How do clinical practice and professional skills connect?

Work Education (E.T.), based on the Martí and Marxist principle of the study-work link and conducted in the healthcare and clinical setting, is the fundamental organizational form of the educational-training process in the clinical cycle of the various careers of Higher Medical Education. It is distinguished by being a primary human activity in an atmosphere of profound humanism, which positively affects the graduate's development of the kind of personality that society demands. It stands for a rigorous academic and scientific procedure that ensures a thorough, reliable, and capable education. With the teacher serving as the best model, E.T. is closely associated with the educational-pedagogical process and promotes teaching values of doctors, including humanism, responsibility, dignity, patriotism, solidarity, dependability, honesty, and justice [22].

Value is all that encourages a person to realize their potential as a human being fully and act in a way that is humane, without which a person would lose their sense of humanity. Value is a multifaceted concept that can be personal, familial, professional, or societal. It is also constructed in the same settings humans use to live their material and spiritual lives. It strives for excellence or perfection. As a result, they stand for social constructions created through interpersonal communication, introspection, and discussion, where each society develops its values per its history, culture, customs, and socioeconomic growth. Forming values in higher education is inextricably tied to the educational and evolutionary aspects of training, acknowledging the university's significant role in both processes [23].

This is a topic of utmost significance and validity. Still, we haven't reached the required degrees of systematization. Thus, systematic, dialectical, purposeful, complex, multifactorial, dynamic, extended, staggered, global, individualized, contextualized, flexible, and professionalizing processes are all used to describe value development in higher education [24].

Different kinds of E.T. exist:

The visit card, the case presentation, and diagnostic treatment are prominent examples. These are essential activities in hospital departments of internal medicine services or primary care settings, and they provide the best environments for developing "training for skills" beginning at the university level. These two forms of E.T. take shape during the fifth semester of the degree during the Clinical Propaedeutics rotation, and they continue to solidify throughout the Internal Medicine rotation in the sixth semester. Despite having their own goals, these educational scenarios serve as ideal, interactive settings that support the development of values through communication between patients, family members, students, and teachers due to the doctor-patient relationship fostered in the medical field—interview [25].

The student understands the meaning of these qualities to be a good doctor in this relationship, keeping in mind that clinical medicine has a much more practical component than theoretical medicine and a solid emotional component associated with the connection between theory and practice in every doctor-patient encounter. Therefore, the program perfected in 2014 states that the subject Clinical Propaedeutics and Medical Semiology, which lasts 20 weeks in the fifth semester of the degree (third year), has 476 hours, of which 325 belong to the E.T. (68.27%); the subject Internal Medicine, on the other hand, has a duration of 20 weeks in the sixth semester and, according to the 2018 specialization, has 360 hours of which are dedicated to E.T. out of 454 total (79.29%). It has been noted that both subjects' available time is devoted to the various E.T. modalities, of which the two previously mentioned will be considered for over half of the time [26, 27].

The hospital or community visit card (V.P.), which enables didactic-attentional organization in the reference subject teaching-learning process and concretizes the medical education process, is the fundamental modality of work education. Values, to the point that it is recognized as a regulated and exclusive E.T. modality in the medical field. In addition, it involves quality management through the relationship of education, competence, and performance; it integrates research, teaching, and medical assistance activities based on the transformation of the health status of the

patient and his community; and it prepares the future professional to apply the clinical method and to be able to carry out their work in a hospital or the community, in any place and circumstance, with a high degree of humanism and responsibility [28].

Because the patient, the student, and the doctor all have closely related educational and health goals, the various stages of the clinical method can develop very didactically during the medical act. However, the most important thing is that the working group, under the direction of a professor or leader, learns to manage the patient who has already been diagnosed or is in the process of being diagnosed, which is why it is an essential procedure for medical training, where the principles must be followed. didactic elements of the teaching process in education, especially the part that explains how theory and practice are related. At the secondary or primary level of care, Diagnostic Discussion (D.D.) is a type of E.T. aimed at helping medical students develop the reasoning skills required to integrate and assess information from a patient's history, physical examination, and paraclinical examinations to make a diagnostic decision that informs the therapeutic plan and associated prognostic assessments [29].

Teaching trainees the route to diagnosis is, thus, the primary goal of the D.D. At this point, the group members, especially the younger ones, learn to consider the patient's health issue and broaden the diagnostic options to develop a preliminary diagnosis. Thus, another scenario embodies the didactic principle of connecting theory and practice. This principle encourages students and teachers to work synergistically as members of the primary working group with the patient and his family. It also connects the knowledge system, skills, and values fundamental to professional competence. As a result, it advances their education and, in essence, helps students' oral presentations and group discussions to grow [30].

Everything said is predicated on the premise that a doctor who properly balances theoretical knowledge, practical application, and human attitudes is a competent physician. Enhancing one's mode of action, which aligns with the growth of one's performance through professional competence, qualifies and shows up in all the roles considered in the training model's professional profile (administrative, investigative, didactic training, and curative)—the health system specialist in medical university [31].

CONCLUSION:

National methodological authorities urgently need to assess the proposal to structure a curriculum through on-the-job training based on the professional competencies of the medical vocation, using Clinical Propaedeutics and Internal Medicine as pilot scenarios. To support the intended shift in education toward reinforcing fundamental principles, which aligns with the attributes of the present medical university. This would enable us to strive for better outcomes to produce a more transcendent graduate who actively participates in society while practicing his career.

REFERENCES:

1. Ayupovna, P.D., *EVALUATION OF THE EFFECTIVENESS OF SIMULATION TRAINING IN TEACHING HEART AND LUNG AUSCULTATION*. 2023.
2. Erickson, S.R., et al., *Severity of anxiety and work-related outcomes of patients with anxiety disorders*. Depression and Anxiety, 2009. **26**(12): p. 1165-1171.
3. Sairanen, E., et al., *Mediators of change in online acceptance and commitment therapy for psychological symptoms of parents of children with chronic conditions: An investigation of change processes*. Journal of Contextual Behavioral Science, 2020. **15**.
4. Catalfamo, L.M., et al., *The utility of Capsicum annum L. in internal medicine and dentistry: A comprehensive review*. International Journal of Environmental Research and Public Health, 2022. **19**(18): p. 11187.
5. Febres-Ramos, R.J. and M.R. Mercado-Rey, *Patient satisfaction and quality of care of the internal medicine service of Hospital Daniel Alcides Carrión. Huancayo-Perú*. Revista de La Facultad de Medicina Humana, 2020. **20**(3): p. 397-403.

6. Pottel, H., et al., *Development and validation of a modified full age spectrum creatinine-based equation to estimate glomerular filtration rate: a cross-sectional analysis of pooled data*. *Annals of Internal Medicine*, 2021. **174**(2): p. 183-191.
7. Baxodurovna, D.A., et al., *development of professional self-education competence of future specialists with medical education*. *Journal of Universal Science Research*, 2023. **1**(12): p. 139-144.
8. Bodley, T. et al., *Improving care transitions between the intensive care unit and general internal medicine ward. A demonstration study*. *ATS scholar*, 2020. **1**(3): p. 288-300.
9. Melvin, L., et al., *Tensions in assessment: The realities of entrustment in internal medicine*. *Academic Medicine*, 2020. **95**(4): p. 609-615.
10. Watari, T., *Malpractice internal medicine claims involving diagnostic and system errors in Japan*. *Internal Medicine*, 2021. **60**(18): p. 2919-2925.
11. Nguemeni Tiako, M.J., E.C. South, and V. Ray, *Medical schools as racialized organizations: a primer*. *Annals of Internal Medicine*, 2021. **174**(8): p. 1143-1144.
12. Moreto, G., et al., *Reflections in Medical Education: Empathy, Emotions, and Possible Pedagogical Resources for the Emotional Education of Medical Students*. 2022.
13. Cleland, J.A., et al., *Redefining scholarship for health professions education: AMEE Guide No. 142*. *Medical Teacher*, 2021. **43**(7): p. 824-838.
14. Ma'rifah, N., D. Hasmono, and U. Hadi, *THE QUALITY OF ANTIBIOTIC USE AMONG PATIENTS FROM INTERNAL MEDICINE AND SURGICAL SERVICE*. *Folia Medica Indonesiana* (2355-8393), 2021. **57**(1).
15. Caldwell, P., et al., *Telemetry overuse and the effect of educational and electronic health record-based interventions on an academic internal medicine ward*. *South Med J*, 2021. **114**(9): p. 572-576.
16. Kawamura, R., et al., *Survey of Inpatient Consultations with General Internal Medicine Physicians in a Tertiary Hospital: A Retrospective Observational Study*. *International Journal of General Medicine*, 2023: p. 1295-1302.
17. Levine, D.M., et al., *Hospital-level care at home for acutely ill adults: a randomized controlled trial*. *Annals of Internal Medicine*, 2020. **172**(2): p. 77-85.
18. Wanvoegbe, F., K. Agbodande, and A. Alassani, *Systemic Inflammatory Diseases in Internal Medicine at the CNHU-HKM of Cotonou: Frequency, Clinical, And Immunological Aspects. Trends Int Med. 2022; 2 (2): 1-4. Correspondence: Finangnon Armand Wanvoegbe*. Internal Medicine Department of CHUD-OP of Porto-Novo, Benin. Received, 2022. **19**.
19. Robbins, C. and S. Martocci, *Timing of prenatal care initiation in the Health Resources and Services Administration Health Center Program in 2017*. *Annals of Internal Medicine*, 2020. **173**(11_Supplement): p. S29-S36.
20. Algoblan, D., L. AlAitah, and A.M. Alotaibi, *Internal jugular and subclavian vein thrombosis in a post-liver transplant patient*. *Cureus*, 2020. **12**(1).
21. Suzan, V. and H. Yavuzer, *A Fuzzy Dematel Method to evaluate the most common diseases in internal medicine*. *International Journal of Fuzzy Systems*, 2020. **22**: p. 2385-2395.
22. Bouck, Z., et al., *Association of low-value testing with subsequent health care use and clinical outcomes among low-risk primary care outpatients undergoing an annual health examination*. *JAMA Internal Medicine*, 2020. **180**(7): p. 973-983.
23. Nelson, H.D., et al., *Screening for anxiety in adolescent and adult women: a systematic review for the Women's Preventive Services Initiative*. *Annals of Internal Medicine*, 2020. **173**(1): p. 29-41.
24. Arbanas, J.C., et al., *Estimated Annual Spending on Lecanemab and Its Ancillary Costs in the US Medicare Program*. *JAMA Internal Medicine*, 2023.
25. Guasch-Ferré, M. and W. Willett, *The Mediterranean diet and health: A comprehensive overview*. *Journal of Internal Medicine*, 2021. **290**(3): p. 549-566.
26. Daniel, V. and K. Daniel, *Perception of nurses' work in a psychiatric clinic*. *Clinical Medicine Insights*, 2020. **1**(1): p. 27-33.

27. Acs, B., M. Rantalainen, and J. Hartman, *Artificial intelligence as the next step towards precision pathology*. Journal of Internal Medicine, 2020. **288**(1): p. 62-81.
28. Kent, D.M., et al., *The predictive approaches to treatment effect heterogeneity (PATH) statement*. Annals of Internal Medicine, 2020. **172**(1): p. 35-45.
29. Daniel, M., et al., *An update on developments in medical education in response to the COVID-19 pandemic: A BEME scoping review: BEME Guide No. 64*. Medical teacher, 2021. **43**(3): p. 253-271.
30. Hill, M., et al., *Implementation and evaluation of a self-directed learning activity for first-year medical students*. Medical education online, 2020. **25**(1): p. 1717780.
31. Ashokka, B., et al., *A BEME systematic review of teaching interventions to equip medical students and residents in early recognition and prompt escalation of acute clinical deteriorations: BEME Guide No. 62*. Medical Teacher, 2020. **42**(7): p. 724-737.