

# Transdisciplinarity: What competencies do future healthcare managers need to succeed?

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Al-Maqbali M. Transdisciplinarity: What competencies do future healthcare managers need to succeed?. *J Nur Res Pract.* 2018;2(4): 13-18.

## ABSTRACT

Educated primarily as clinical experts, healthcare managers frequently lack the core competencies of leaders. In this quantitative study, 18 Ministry of Health subject matter experts in the Middle East provided feedback about the importance and frequency of 37 healthcare manager competencies reported in the literature. Data were then used to determine the criticality of each competency. Staffing management, cross-cultural communication, technical excellence, building relationships and evidence-based practice received the highest individual criticality scores. The data also indicated healthcare leaders should use a transdisciplinary approach that leverages a strong clinical foundation while also developing multidisciplinary human resources (HR) competencies.

**Transdisciplinarity: What competencies do healthcare managers need to succeed?**

Functioning as catalysts for change, leaders often are the key to organizational success. In an environment of economic instability, increased competition, and workforce shortages, organizations need leaders to inspire and motivate stakeholders to embrace change. Unlike managers, who have a short-term focus that tends to maintain the status quo, leaders are visionary agents of change who foster innovation, develop people, and inspire trust.

Unfortunately, many mid-level healthcare managers are ill prepared to manage staff or drive results. Educated primarily as clinical experts, healthcare managers frequently lack the core competencies of leaders. As a result, many managers are disengaged and struggle when leading their individual organizations through change.

**Key Words:** *Awareness; Occupational; Petrochemical; Safety*

## INTRODUCTION

The vast majority of leadership studies lack international perspective because they are based on Western theories [1-4]. Unlike Western organizations, many Arab Gulf and Middle Eastern countries rely heavily on expatriate healthcare workers [5-9]. As a result, the existing competency literature has several significant limitations.

Most prior research focuses on nurse and/or nurse manager competencies [10-12], leaving a significant gap in the literature regarding the competencies of other healthcare managers (e.g., senior leaders, middle level managers, heads of medical and allied health departments). Competency research also tends to operate from a Western perspective. Despite the fact that the American Organization of Nurse Executives is a widely respected international organization, its assessments [10-12] contain language clearly developed for U.S. healthcare managers (e.g., Joint Commission, CMS, State Nurse Practice Act, State Board of Nursing Regulations, payer mix, CMI, tort reform, etc.). Far less is known about healthcare managers who function in an international context. Finally, competency models tend to lack rigor and validation. While competency descriptions and assessment tools are available [10-14] these resources provide no information about how the competency scales were developed or tested. Without rigorous validation, the relevance of these competency instruments is unknown.

## PURPOSE

To overcome these limitations, a quantitative study was conducted to identify the critical competencies of successful healthcare managers who work in a multicultural environment. Existing literature was reviewed to develop a preliminary list of healthcare manager competencies. Multiple internet search engines were used to locate information indexed with keywords such as leadership, healthcare, nurse managers, healthcare managers, allied health managers, competencies, knowledge, skills, abilities, and emergent

topics in healthcare (e.g., informatics, electronic health records, cultural communication, collective bargaining, etc.). To review literature related to Western best practices, information was also collected from O\*Net (2013), the U.S. Department of Labor's occupational information network, to identify the competencies of health and medical services managers who "plan, direct, or coordinate medical and health services in hospitals, clinics, managed care organizations, public health agencies, or similar organizations" (para.1). To review literature related to international best practices, the American Organization of Nurse Executives (AONE) Competencies Assessment Tool (AONE, 2005, 2011) as well as the Nurse Manager Inventory Tool (Nurse Manager Leadership Collaborative, 2004) were also reviewed. Finally, an industrial and organizational psychology subject matter expert in competency development [15] was consulted for insight about proprietary leadership competency instruments developed by reputable consulting firms, such as Developmental Dimensions International (DDI, 2013) [16], Personnel Decisions International (PDI, 2013) [17], and Wilson Learning (2013) [18].

The literature review identified 37 healthcare manager competencies that clustered into five global categories (Table 1):

- ▶ **Managing and focusing on people** – The leader's ability to direct outcomes, develop employees, succession plan, cooperate, and influence others
- ▶ **Driving results** – The leader's ability to strategically plan, monitor work activities, share decision making, create innovative solutions, manage change, demonstrate initiative, and ensure safety and compliance
- ▶ **Building relationships**– The leader's ability to communicate, cooperate, and collaborate with compassion and an appreciation for diversity

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Received: August 29, 2018, Accepted: February 21, 2019, Published: February 28, 2019



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**Table 1**  
**Healthcare Manager Competencies Identified in the Literature**

<b>Managing and Focusing on People</b>	
<b>Directing Outcomes</b>	Sets high expectations for healthcare staff, specifies the work activities that need to be accomplished, and monitors staff performance against expectations
<b>Employee Development</b>	Accurately assesses strengths and development needs of healthcare staff and makes learning opportunities available for staff to expand their capabilities
<b>Succession Planning</b>	Anticipates long-range healthcare facility needs and develops the human capital necessary to supply the internal talent necessary to achieve the healthcare facility's strategy
<b>Cooperation</b>	Seeks to accomplish work activities and goals by collaborating with others
<b>Influencing Others</b>	Persuades others to listen, commit, and act using compelling communication, rewarding appropriate behaviors, and confronting and managing inappropriate behaviors
<b>Resolving Interpersonal Conflicts</b>	Addresses areas of disagreement between individuals and groups to produce constructive solutions
<b>Building Productive Relationships</b>	Creates a respectful, caring, and trusting environment for others, maintaining friendly interactions with others
<b>Driving Results</b>	
<b>Strategic Planning</b>	Develops and implements plans that address short- and long-term business goals, challenges, and opportunities
<b>Monitoring Work Activities</b>	Measures and analyzes work performance and accomplishments in support of strategic short- and long-term plans, and takes action to ensure achievement of deadlines and goals
<b>Shared Decision Making</b>	Engages staff and others in dialogue to make and communicate sound, fact-based and timely decisions that are patient-centered and reflect the long- and short-term interests of the healthcare organization
<b>Creating Innovative Solutions</b>	Creates a work environment that encourages creative thinking and innovation to improve patient care continuously
<b>Change Management</b>	Serves as a change agent, viewing change as an opportunity to improve healthcare outcomes and taking action to actively involve others in change processes
<b>Initiative</b>	Recognizes when action is needed to achieve desired patient outcomes and responds quickly to pressing demands without direction
<b>Ensuring Safety and Compliance</b>	Emphasizes and ensures healthcare staff safety, making certain staff comply with healthcare organization and regulatory standards
<b>Building Relationships</b>	
<b>Written Communication</b>	Expresses thoughts clearly, concisely, logically, and persuasively in writing.
<b>Oral Communication</b>	Expresses thoughts verbally in a clear, concise, logical, and organized manner.
<b>Cooperation</b>	Seeks to accomplish work goals (e.g., determine patient care service needs, develop patient care policies and procedures, identify patient care equipment and facility needs) through collaboration with other healthcare providers.
<b>Teaming</b>	Works effectively in a group or team environment of which he or she is not necessarily the leader.
<b>Compassion</b>	Demonstrates genuine concern for the welfare of all others (e.g., staff, patients, visitors).
<b>Diversity Appreciation</b>	Stresses the business value of diversity (e.g., culture, race, gender, age), seeking to learn from those who are different from the self and treating people of diverse backgrounds with dignity and respect.
<b>Community Involvement</b>	Seeks opportunities to represent the organization and provide consultation to community and business leaders regarding nursing and health care.
<b>Culturally-Congruent Clinical Practice</b>	
<b>Transcultural Care</b>	Seeks to provide culturally-congruent patient care to contribute to the health and well-being of culturally-diverse patients.
<b>Social Justice</b>	Advocates for socially just policies and treats others (e.g., patients, staff) fairly regardless of economic status, race, ethnicity, age, citizenship, disability, or sexual orientation
<b>Ethics</b>	Models ethical business behavior in appreciation of the ethical standards across cultures and countries
<b>Critical Reflection</b>	Critically reflects on values, beliefs, and cultural heritage to increase awareness of how these qualities and issues can impact culturally congruent nursing care to improve professional and personal practice
<b>Cultural Competence</b>	Seeks understanding of perspectives, traditions, values, and practices of culturally diverse individuals, families, communities, and populations for whom they care
<b>Cultural Propriety and Versatility</b>	Adapts own behavior to demonstrate proper and culturally appropriate behavior when dealing with others from different countries and cultures
<b>Patient Advocacy</b>	Advocates for healthcare policies, delivery systems, and resources that support the social and cultural rights of diverse patients
<b>Building a Multicultural Workforce</b>	Ensures healthcare worker recruitment and retention efforts appropriately support hiring and retaining the culturally diverse workforce needed to deliver culturally competent care to an increasingly diverse population
<b>Cultural Competence Self-Development</b>	Participates in educational activities to acquire the knowledge and skills necessary to promote and provide culturally congruent healthcare
<b>Cross-Cultural Communication</b>	Uses culturally competent verbal and nonverbal communication skills with patients to respect dignity and preservation of human rights
<b>Occupational Knowledge</b>	
<b>Evidence-Based Practice</b>	Demonstrates an understanding of how to use evidence in making decisions about the care of individual patients and the delivery of health services, and holds others accountable for utilizing evidence-based data and research
<b>Health Informatics</b>	Demonstrates an understanding of how to use resources, devices, and methods to optimize the acquiring, storing, retrieving, and using electronic health information in current healthcare facility
<b>Technical Excellence</b>	Maintains and demonstrates current knowledge required to perform day-to-day work activities (e.g., knowledge related to clinical practice, work design, healthcare economics, healthcare policy, governance, patient safety, quality improvement, risk management)
<b>Financial Management</b>	Demonstrates understanding of healthcare financial business models and leverages knowledge to generate and/or save the healthcare organization money
<b>Staffing Management</b>	Demonstrates understanding of human resource practices and policies related to employee recruiting, staffing, development, promotion, and retention
<b>Collective Bargaining</b>	Demonstrates an understanding of established guidelines and an understanding of implications for managing healthcare providers working under a union contract or collective bargaining agreement

- ▶ **Culturally-congruent clinical practice** – The leader’s ability to facilitate an environment of culturally-appropriate, equitable, and ethical patient care
- ▶ **Occupational knowledge** –The leader’s ability to demonstrate knowledge to perform day-to-day work activities, including clinical practice, research, health informatics, finance, and staffing

**METHOD**

Ministry of Health (MOH) subject matter experts (SMEs) in the Middle East (N=18) were asked to think about the day-to-day job activities of their healthcare managers. SMEs then rated the importance and frequency of each job activity using a 5-point Likert scale. For instance, SMEs were asked to rate the importance of a healthcare manager’s written communication skills (1=unimportant, 3=important, 5=very important). MOH SMEs also indicated how frequently healthcare managers are required to use written communication skills (1=rarely, 3=often, 5=on a daily basis).

Using a widely accepted methodology for identifying critical competencies [15-25], average importance and frequency ratings were computed then multiplied to determine a criticality score that ranged from 1 to 25.

Unimportant job activities (rated 1 on the importance scale) that are rarely used (rated 1 on the frequency scale) received a criticality score of 1, while very important competencies (rated 5 on the importance scale) that are used on a daily basis (rated 5 on the frequency scale) received a criticality score of 25.

**RESULTS**

Table 2 contains the average category scores for the 37 healthcare manager competencies identified in the literature. Occupational knowledge competencies received the highest average criticality score of 17.43, followed by culturally-congruent clinical practice (17.24), managing and focusing on people (17.00), building relationships (16.57), and driving results (16.41). Low variance in the average criticality scores suggested all the competency categories were perceived as important.

The 37 individual competencies were then sorted and color-coded to identify the most critical competencies (Table 3). Staffing management (21.43), cross-cultural communication (20.99), technical excellence (20.44), building relationships (19.67), and evidence-based practice (19.33) received the highest individual criticality scores.

**Table 2**  
**Average Criticality Scores by Competency Category**

Competency	Average Importance (1 to 5)	Average Frequency (1 to 5)	Competency Criticality (1 to 25)	Average Category Criticality (1 to 25)
Occupational Knowledge				
Staffing Management	4.94	4.33	21.43	17.43
Technical Excellence	4.78	4.28	20.44	
Evidence-Based Practice	4.83	4.00	19.33	
Health Informatics	4.44	4.00	17.78	
Financial Management	4.56	3.47	15.81	
Collective Bargaining	3.44	2.83	9.76	
Culturally Congruent Clinical Practice				
Cross-Cultural Communication	4.72	4.44	20.99	17.24
Patient Advocacy	4.61	4.11	18.96	
Social Justice	4.67	4.06	18.93	
Cultural Propriety and Versatility	4.56	4.11	18.73	
Ethics	4.39	4.22	18.53	
Cultural Competence	4.39	3.67	16.09	
Transcultural Nursing	4.06	3.89	15.77	
Building a Multicultural Workforce	4.28	3.61	15.45	
Critical Reflection	4.22	3.50	14.78	
Cultural Competence Self-Development	4.06	3.50	14.19	
Managing and Focusing on People				
Building Productive Relationships	4.78	4.12	19.67	17.00
Cooperation	4.39	4.39	19.26	
Influencing Others	4.33	4.06	17.57	
Employee Development	4.83	3.44	16.65	
Resolving Interpersonal Conflicts	4.50	3.56	16.00	
Directing Outcomes	4.78	3.22	15.40	
Succession Planning	4.72	3.06	14.43	
Building Relationships				
Diversity Appreciation	4.44	4.28	19.01	16.57
Oral Communication	4.50	4.22	19.00	
Cooperation	4.61	4.11	18.96	
Teaming	4.28	3.94	16.87	
Written Communication	4.17	3.50	14.58	
Compassion	3.72	3.72	13.85	
Community Involvement	4.06	3.39	13.74	
Driving Results				
Ensuring Safety and Compliance	4.72	3.94	18.63	16.41
Initiative	4.50	3.83	17.25	
Creating Innovative Solutions	4.28	3.83	16.40	
Change Management	4.39	3.67	16.09	
Monitoring Work Activities	4.50	3.53	15.88	
Strategic Planning	4.83	3.22	15.57	
Shared Decision Making	4.44	3.39	15.06	

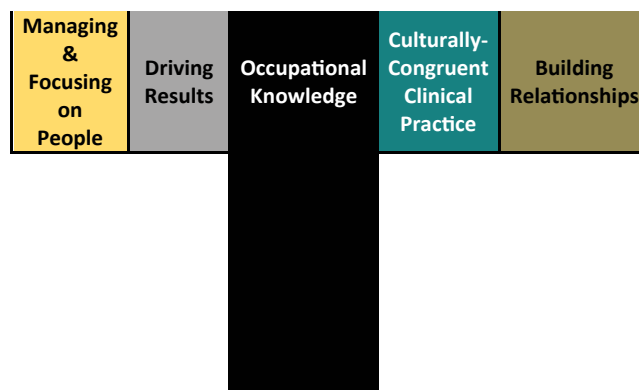
**Table 3**  
**Individual Competency Criticality Scores**

#	Competency	Competency Category	Average Importance (1 to 5)	Average Frequency (1 to 5)	Competency Criticality (1 to 25)
1	Staffing Management	Occupational Knowledge	4.94	4.33	21.43
2	Cross-Cultural Communication	Culturally Congruent Clinical Practice	4.72	4.44	20.99
3	Technical Excellence	Occupational Knowledge	4.78	4.28	20.44
4	Building Productive Relationships	Managing and Focusing on People	4.78	4.12	19.67
5	Evidence-Based Practice	Occupational Knowledge	4.83	4.00	19.33
6	Cooperation	Building Relationships	4.39	4.39	19.26
7	Diversity Appreciation	Building Relationships	4.44	4.28	19.01
8	Oral Communication	Building Relationships	4.50	4.22	19.00
9	Cooperation	Managing and Focusing on People	4.61	4.11	18.96
10	Patient Advocacy	Culturally Congruent Clinical Practice	4.61	4.11	18.96
11	Social Justice	Culturally Congruent Clinical Practice	4.67	4.06	18.93
12	Cultural Propriety and Versatility	Culturally Congruent Clinical Practice	4.56	4.11	18.73
13	Ensuring Safety and Compliance	Driving Results	4.72	3.94	18.63
14	Ethics	Culturally Congruent Clinical Practice	4.39	4.22	18.53
15	Health Informatics	Occupational Knowledge	4.44	4.00	17.78
16	Influencing Others	Managing and Focusing on People	4.33	4.06	17.57
17	Initiative	Driving Results	4.50	3.83	17.25
18	Teaming	Building Relationships	4.28	3.94	16.87
19	Employee Development	Managing and Focusing on People	4.83	3.44	16.65
20	Creating Innovative Solutions	Driving Results	4.28	3.83	16.40
21	Change Management	Driving Results	4.39	3.67	16.09
22	Cultural Competence	Culturally Congruent Clinical Practice	4.39	3.67	16.09
23	Resolving Interpersonal Conflicts	Managing and Focusing on People	4.50	3.56	16.00
24	Monitoring Work Activities	Driving Results	4.50	3.53	15.88
25	Financial Management	Occupational Knowledge	4.56	3.47	15.81
26	Transcultural Nursing	Culturally Congruent Clinical Practice	4.06	3.89	15.77
27	Strategic Planning	Driving Results	4.83	3.22	15.57
28	Building a Multicultural Workforce	Culturally Congruent Clinical Practice	4.28	3.61	15.45
29	Directing Outcomes	Managing and Focusing on People	4.78	3.22	15.40
30	Shared Decision Making	Driving Results	4.44	3.39	15.06
31	Critical Reflection	Culturally Congruent Clinical Practice	4.22	3.50	14.78
32	Written Communication	Building Relationships	4.17	3.50	14.58
33	Succession Planning	Managing and Focusing on People	4.72	3.06	14.43
34	Cultural Competence Self-Development	Culturally Congruent Clinical Practice	4.06	3.50	14.19
35	Compassion	Building Relationships	3.72	3.72	13.85
36	Community Involvement	Building Relationships	4.06	3.39	13.74
37	Collective Bargaining	Occupational Knowledge	3.44	2.83	9.76

**DISCUSSION**

The study’s findings indicate managers must be capable of demonstrating a broad range of leadership competencies to meet the needs of their healthcare organizations. Managers who have been educated primarily as clinical experts may be unprepared to meet future challenges. Instead, the study’s results suggest healthcare leaders need transdisciplinary competencies. In their Future Work Skills 2020 report, the Institute for the Future (2011) [26] explained transdisciplinary leaders have an ability to understand concepts across multiple disciplines. According to IFTF, the ideal workers in the next decade will be T-shaped (Figure 1), having deep understanding of at least one field, while also demonstrating the capacity to communicate effectively in a broad range of disciplines.

Consistent with this forecast, the study’s results strongly supported the need for transdisciplinary managers. Although the occupational knowledge category received the highest criticality score (17.43 out of 25), culturally-congruent clinical practice (17.24), managing and focusing on people (17.00), building relationships (16.57), and driving results (16.41) received similar criticality ratings (Table 2). Additionally, when the individual criticality scores were color-coded by category (Table 3), no single category dominated the findings. Instead, the data indicated broad-based, multidisciplinary competencies are necessary. For instance, healthcare leaders may need to: Manage staff while communicating cross-culturally Build productive relationships while using evidence-based practices Ensure safety while appreciating diversity.

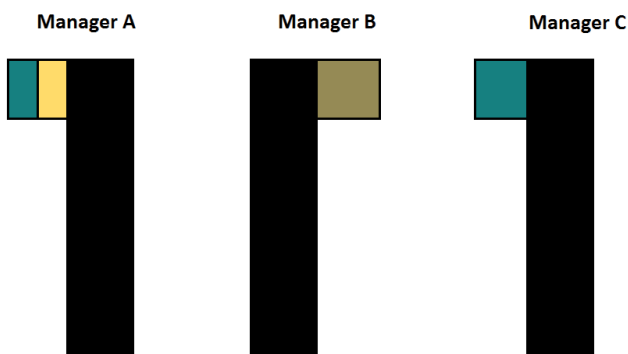


**Figure 1)** “T” shaped model of transdisciplinary healthcare leader competencies.

With three of the top five most critical competencies (staffing management, technical excellence, and evidence-based practice), the occupational knowledge category anchors the development of transdisciplinary healthcare leaders (Figure 1). Data from the study suggests successful healthcare managers must demonstrate they have knowledge and expertise in their specific field. For instance, the leader of an oncology unit must be an expert in the treatment of cancer and other tumors. Similarly, a pharmacy manager must understand the therapeutic use of drugs. Without core occupational knowledge, it is unlikely that a healthcare manager will be able to interact meaningfully with his or her staff.

However, the study's findings also indicate that occupational knowledge alone is insufficient. Effective healthcare managers must also be prepared to manage/focus on people, drive results, demonstrate culturally congruent clinical practice, and build relationships. Figure 1 illustrates optimum T-shaped (transdisciplinary) healthcare management with leaders who demonstrate competency depth as well as breadth.

Unfortunately, many healthcare managers are not transdisciplinary. Instead, managers are hired with missing or poorly developed competencies. For instance, Manager A has strong occupational knowledge, moderate culturally congruent practice and staff management; but lacks the ability to build relationships and achieve results (Figure 2). Similarly, Managers B and C have occupational knowledge as well as one other competency; but they are ill prepared to manage staff or achieve results. Unfortunately, such situations are common in healthcare [27,28]. MOH subject matter experts in this study frequently described managers with high levels of occupational knowledge (e.g., physicians or nurses) who were unable to manage and motivate their staff. While such managers may be top performers in their specific fields, effective leaders must demonstrate a broad range of multidisciplinary competencies (e.g., staffing management, evidence-based practice, cross-cultural communication, and safety/compliance). For instance, one subject matter expert in the study, a physician, recommended that all doctors take communication courses. Likewise, another SME urged, "We should not restrict ourselves to only hire doctors as director generals or hospital directors. We should consider a candidate only after seeing his or her record of service. We are looking for leaders – not physicians or head nurses."



**Figure 2):** Illustrations of three healthcare managers who lack transdisciplinary competencies.

**Research implications**

Future researchers can use the methodology described in the current study to measure the frequency and importance of specific healthcare manager competencies to identify the most critical competencies within their organizations. After determining which competencies are most important, researchers can determine whether there are gaps in their managers' performance. For instance, if strategic planning is found to be a critical competency at a particular healthcare organization, then HR professionals should regularly assess their healthcare managers' proficiency with strategic planning and provide professional development, as needed.

**Practical implications**

To succeed, healthcare organizations should use a transdisciplinary model when hiring and promoting healthcare managers. The study's findings indicate that healthcare managers need broad-based multidisciplinary skills. Occupational (clinical) knowledge alone is not sufficient preparation for a manager. HR leaders can use the transdisciplinary diagrams (Figures 1 and 2) to represent the competencies of potential candidates visually. If/when a manager lacks transdisciplinarity, the competency categories reported in this study (Tables 1-3) can be used to prepare a professional development plan for the manager.

**LIMITATIONS**

The study's findings are limited to the insight of 18 Ministry of Health subject matter experts in the Middle East. Results may vary in Western countries with smaller expatriate workforces and/or different regulatory environments.

**CONCLUSION**

As demand for quality medical services increases, it is essential that healthcare organizations recruit, develop, and retain competent managers.

Unfortunately, the Peter Principle – that every employee tends to rise to his or her level of incompetence [29] – is alive and well in healthcare. Top performing clinicians are often promoted into managerial positions with little to no training, resulting in poor performance [27,28,30]. To maximize organizational outcomes, healthcare leaders should use a transdisciplinary approach that leverages a strong clinical foundation while also developing multidisciplinary HR competencies.

**DECLARATION OF INTEREST**

The authors do not mention any conflict of interest. Only the authors are responsible for the content of the paper.

**REFERENCES**

- Murray A. What is the difference between management and leadership? Wall St J 2013.
- Hage J. Influence of religion and religiosity on leadership practices in the workplace: A quantitative correlation study. (Doctoral dissertation) University of Phoenix. UML-3538843, 2013.
- Kouzes JM, Posner BZ. Encouraging the heart: A leader's guide to rewarding and recognizing others. San Francisco, CA: Jossey-Bass 2003.
- Schein EH. Organizational culture and leadership. (4th ed.). San Francisco, CA: Jossey Bass, 2010.
- Bozionelos N. Expatriation outside the boundaries of the multinational corporation: A study with expatriate nurses in Saudi Arabia. Human Resource Management. 2009;48(1):111-134.
- El-Haddad. Nursing in the United Arab Emirates: An historical background. Int Nurs Rev. 2006;53(4):284-289.
- Ghosh B. Health workforce development planning in the Sultanate of Oman: A case study. Human Resources for Health. 2009;7:47.
- Halligan Phil. Caring for patients of Islamic denomination: Critical care nurses' experiences in Saudi Arabia. Journal of Clinical Nursing. 2006;15(12):1565-1573.
- Melby CS, Dodgson JE, Tarrant M. The experiences of Western expatriate nursing educators teaching in Eastern Asia." J Nursing Scholarship 2008;40 (2):176-183.
- American Organization for Nurse Executives. The AONE Nurse executive competencies 2005.
- American Organization for Nurse Executives. AONE Nurse Executive Competencies Assessment Tool 2011.
- Nurse Manager Leadership Collaborative. Nurse manager inventory tool 2004.
- O\*NET Online. Summary report for: 11-9111.00 - Medical and health services managers (para. 1) 2013.
- Transcultural Nursing Society. Standards of practice for culturally competent nursing care: Executive summary 2010.
- Miller LA, Lovler RL, McIntire SA. Foundations of psychological testing: A practical approach. Thousand Oaks, CA: Sage 2013.
- Developmental Dimensions International. The talent management expert – Strategy, execution, results 2013.
- Personnel Decisions International Ninth House. Proven leadership solutions for a complex global world 2013.
- Wilson Learning. About us - Who we are 2013.
- Brannick MT, Levine EL, Morgeson FP. Job analysis: Methods, research, and applications for human resource management in the new millennium. (2nd ed.). Thousand Oaks, CA: Sage 2007.
- Campion MA, Fink AA, Ruggeberg BJ, et al. Doing competencies well: Best practices in competency modeling. Pers. Psychol. 2011;64(1):225-262.
- Kennie-Kaulbach N, Farrell B, Ward N, et al. Pharmacist provision of primary health care: A modified Delphi validation of pharmacists' competencies." BMC Family Practice. 2012;13(1):27.
- Laustsen G. What do nurse practitioners do? Analysis of a skills survey of nurse practitioners. J Am Acad Nurse Pract. 2013;25(1):32-41.



23. Long DA, Young J, Rickard CM, et al. Analyzing the role of the PICU nurse to guide education of new graduate nurses. *Nurse Education Today*. 2013;33(4):388-395.
24. Muckle TJ, Plaus KA, Henderson J, et al. Professional practice analysis: Determining job relatedness of the certification examination for nurse anesthetists." *J Nurs Regul*. 2012;3(3):55-61.
25. Rudolfa E, Greenberg S, Hunsley J, et al. "A competency model for the practice of psychology." *Training and Education in Professional Psychology*. 2013;7(2):71-83.
26. Institute for the Future 2011. *Future Work Skills 2020*.
27. Angood PB. Physicians, value and compound interest. *Physician Leadersh J*. 2015;2(4):4-6.
28. Van Gorder M, Kearns D, Hong P. The need for physician leadership training: A survey of the American Society of Pediatric Otolaryngology members. *Physician Leadersh J*. 2015;2(2):70-75.
29. Asghar R. Incompetence rains, Er reigns: What the Peter Principle means today." *Forbes* 2014.
30. Cohn J, Moran J. *Why are we bad at picking good leaders?* San Francisco, CA: Jossey-Bass 2011.