

Evaluation of Team-Based Care in an Urban Free Clinic Setting

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This article reports the experiences of a school of nursing, academic health center, and community-based organization working via an interprofessional collaborative practice model to meet the mutual goal of serving the health care needs of an indigent, largely minority population in Birmingham, Alabama. The population suffers disproportionately from chronic health problems including diabetes, obesity, cardiovascular disease, asthma, and mental health disorders. The program emphasizes diabetes management because the academic health center recognized the need for transitional and primary care, including mental health services, for the increasing numbers of uninsured patients with diabetes and its comorbidities. Half of the clinicians involved in this project had no prior experience with interprofessional collaborative practice, and there was confusion regarding the roles of team members from the partnering institutions. Activities involving care coordination consistently received low scores on weekly rating scales leading to the creation of positions for a nurse care manager and pharmaceutical patient assistance program coordinator. Conversely, shared decision making and cooperation ratings were consistently high. Evaluation identified the need for reliable, accessible data and data analysis to target clinically effective interventions and care coordination and to assess cost effectiveness. The strengths, challenges, lessons learned, and next steps required for sustainability of this alignment are discussed. **Key words:** *academic-practice partnership, alignment, interprofessional collaborative practice, medically underserved, team-based care*

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TEAMS that work well together provide better care, yet too frequently health professionals are not taught how to work as teams. Rather, it is assumed that when health professionals are put together in a practice environment they will figure out how to work

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together effectively. Not only do they not figure it out, their lack of collaboration often leads to a detriment in overall patient care.

Although team-based care is not a new concept, it has only recently gained significant traction as a way to improve patient safety and reduce medical error.¹ In their Framework for Action on Interprofessional Education & Collaborative Practice, the World Health Organization makes the case that a collaborative-practice ready workforce understands how to optimize the skills of their members, share case management, and provide better services to patients and communities.² To do this, health workers from different professional backgrounds must be provided with opportunities to learn about, from, and with each other.² This article details a nurse-led, team-based, academic-practice partnership model being implemented in a free clinic in Birmingham, Alabama. The clinic serves a vulnerable population impacted by a broad array of the social determinants of health including generational poverty, homelessness, substance abuse, and a lack of educational opportunities. It is a particularly challenging population that suffers from disparities and inequities in both health and health care. It is a population well served by the alignment of organizations with a common purpose.

This article describes the alignment between 3 institutions (school of nursing, tertiary care academic health center, and community-based nonprofit organization); the development of an interprofessional collaborative practice (IPCP) model; and the setting and patient population where clinicians and students learn how to provide care in a team-based environment. Evaluation findings are detailed, as are the strengths and challenges of the alignment. The article concludes with a discussion of the lessons learned and directions for the future.

THE SETTING

Birmingham, the largest city in Alabama, had an estimated population in 2010 of 212 193, and the entire Birmingham Metropolitan Area had a population of just

more than 1.1 million.³ The Birmingham area is mostly urban, with a large minority population (73.4% black, 3.6% Hispanic, and 1% Asian). Known originally for its iron ore and the steel industry built from it, the city suffered greatly after the depression through the 1950s. The years between the 1960s and early 1970s brought events that would forever change the image of the city, turning a global spotlight on race relations. By the mid-1970s the growing influence of the University of Alabama at Birmingham (UAB) and the strength of its medical and health care programs ushered in a new era for the city. This reputation has continued to grow, as UAB has become one of the nation's premier academic health centers and research universities.

Like many other urban areas across the country, the city of Birmingham has suffered from a declining population until very recently, as much of the middle class moved to the more affluent suburbs. This has left many black residents segregated into areas with substandard housing in close proximity to industrial sites and with limited access to primary care services. The county also has just emerged from an expensive municipal bankruptcy. The county-owned indigent hospital, which provided care for many of its poor and medically needy residents, closed in December 2012, resulting in the loss of an important source of care, and leaving large numbers of vulnerable citizens without access to health care. Birmingham is designated as a medically underserved area/medically underserved population, and the area suffers from shortages in primary care, dentistry, and mental health professional services.⁴

ALIGNMENT OF 3 AGENCIES IN AN ACADEMIC-PRACTICE PARTNERSHIP

In May 2011, the UAB School of Nursing (UAB SON) began a partnership with M-POWER Ministries, a not-for-profit, community-based organization located in a high-need area of Birmingham that provides opportunities for clients to escape generational poverty through education and health care services. M-POWER operates a

comprehensive adult education program, the largest adult literacy program in Alabama, and the only free medical and dental clinic in the county. The initial venture of this partnership was a nurse-led clinic (PATH—*Providing Access to Healthcare*) staffed by the UAB SON 1 morning (4 hours) each week at the M-POWER facility, providing ongoing primary care and chronic disease management for this medically needy population. Faculty from UAB SON collaborated with M-POWER staff and volunteers for the purpose of providing primary care to those with chronic illnesses. A faculty member with a background in nursing administration volunteered to assist with administrative functions such as scheduling clinicians, assessing documentation, quality assurance, and education of volunteers. The alignment of these 2 organizations worked well as increasing numbers of patients were treated by nurse practitioner (NP) faculty and nursing volunteers.

In September 2012, UAB SON received funding for 33 months from the Health Resources and Services Administration to expand the PATH Clinic's operation to 18 hours per week (three 6-hour days) as well as to develop and integrate an interprofessional, team-based practice model involving multiple disciplines. Concurrently, UAB Hospital (the third largest public hospital in the nation) pledged additional resources to provide a source of postdischarge follow-up care for hospitalized vulnerable patients with diabetes. Data collected during 2010 to 2011 reveals the hospital treated more than 1500 uninsured patients with diabetes (T. Poe, DNP, unpublished data, 2014). The goal of providing accessible, effective follow-up care for these uninsured/underinsured patients to prevent readmissions to both the emergency department (ED) and hospital was recognized as a viable option by all 3 partners and created a powerful alignment of goals.

The 3 organizations have individual goals for developing the collaborative practice model. The alignment allows UAB SON NP faculty to participate in an active team-based clinical practice setting. It also allows the participation of undergraduate and graduate stu-

dents for the purpose of learning about primary care, management of chronic illnesses, care of medically underserved populations, and interprofessional practice. For M-POWER Ministries the partnership provides ongoing primary health care in a clinic setting for those in a community with no other source for non-emergent care. For the UAB Health System the alignment potentially provides a means to decrease the frequency of unreimbursed ED visits for primary care, as well as cost and length of stay avoidance for those patients who are admitted.

THE PATH CLINIC INTERPROFESSIONAL COLLABORATIVE PRACTICE MODEL

The PATH Clinic IPCP model was fully established in the fall of 2012. The staffing model for the three 6-hour days of clinic is displayed in Figure 1 and has evolved over the course of the project to its current form. The clinic is typically staffed each day by 2 or 3 clinicians (NPs and physicians), a dietitian, a registered nurse (RN) care manager, a volunteer triage nurse, and a patient assistance program (PAP) coordinator. An optometrist is part of the team 1 day each week to address the need for annual dilated eye examinations in patients who have hypertension and diabetes. Similarly, because this patient population suffers disproportionately from depression, anxiety, substance abuse disorders, and other mental and behavioral health issues, a psychiatric mental health NP provides care 1 day each week and a psychiatrist joins the team 1 day per month.

There are 2 sources of patient referrals to the PATH Clinic. Uninsured patients with poorly controlled diabetes discharged from UAB Hospital are referred to the Tuesday clinic by case managers and diabetes educators. Wednesday and Thursday patients, and some Tuesday patients, are referred primarily from M-POWER Ministries' evening walk-in clinics. All are in need of ongoing primary care and chronic disease management. The clinic has a dispensary that offers a formulary of medications at no cost. Other medications are available free or at discounted

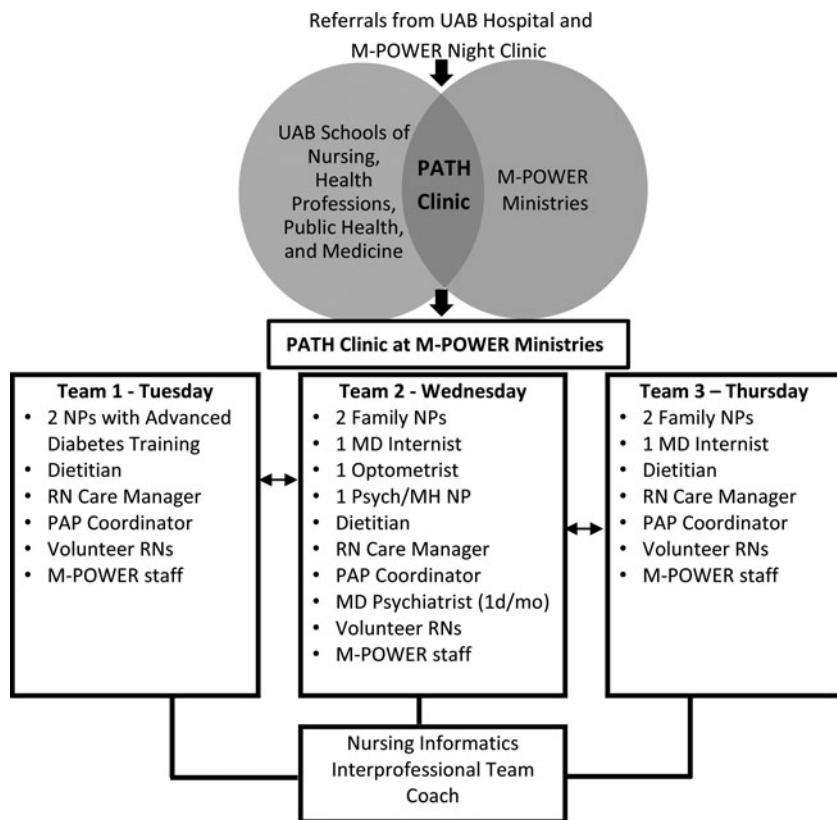


Figure 1. PATH clinic team members.

cost at several retail locations. However, the addition of a coordinator solely devoted to enrolling patients in pharmaceutical company PAPs has proved to be an operational necessity.

Clinic days are structured with a 15-minute “team huddle” each morning for a quick review of patients scheduled for that day. The last 45 minutes of each clinic day are spent in “post-conference” to discuss the patients seen as well as any needed follow-up or referrals. The treatment plan for individual patients is discussed with reference to best evidence and optimal care. Finally, the team reviews the level of team functioning and any challenges to team-based care during that clinic day and makes suggestions regarding needed improvements.

Innovative aspects of this project incorporate inclusion on the team of an informatics specialist, who has assisted with the develop-

ment of forms and configuration of the electronic medical record (EMR) system, and an interprofessional coach, who has conducted regular didactic sessions for team-building throughout the project. The clinic serves as an ideal setting for learners from various programs and consistently includes students from nursing, medicine, dietetics, social work, and optometry, who all learn about team-based care within an IPCP model while providing care to medically needy populations.

CLINIC AND PATIENT POPULATION DESCRIPTION

The PATH Clinic patients have no financial resources for ongoing primary care and chronic disease management. Prior to the PATH Clinic, they received only episodic care at M-POWER’s free evening clinics or through

local hospital EDs. As depicted in Figure 1, the PATH Clinic consists of a designated team practicing together each day. A patient visit may include consultation with any of the team members. Initial and follow-up assessments and treatment are performed by the NP or physician, who makes referrals to the other disciplines as appropriate. The dietitian and PAP coordinator are available for referrals during each clinic day. Other referrals (ie, optometry and psychiatry) are made to coordinate with subsequent clinic visits. Patients are guided through the clinic by a flow sheet (that also serves as a discharge summary) of clinicians seen during the visit, referrals, and needed follow-up care. Patient discharge instructions are written on the flow sheet by the various clinicians, and the patient receives a copy to take home. Follow-up appointments are scheduled by the M-POWER staff and documented on the flow sheet. The PATH Clinic uses both paper and an EMR charting system. Despite early attempts in the project, regulatory requirements preclude linkage of the basic PATH Clinic EMR, specifically created for free clinics, with the complex UAB Hospital EMR.

Since transportation is an issue for this at-risk population, patients are able to pick up medications the day of their visit at no cost, and because it is difficult to meet all medical needs of the patients, referrals to other agencies within the community are coordinated by the RN care manager. A telephone interpreter line for non-English speaking patients is available to all clinicians. This has proven invaluable for effective communication when providing care to the clinic's increasing population of individuals who are not fluent in English.

The PATH Clinic patient population is equally divided between males and females, and the majority of the patients are from minority groups (51% black and 11% Hispanic). The clinic serves a largely middle-aged adult population. The most common primary diagnoses are diabetes, hypertension, hyperlipidemia, asthma, and depression. Most patients have multiple comorbidities. Reasons for re-

ferral to the PATH Clinic include 1 or more chronic conditions with no source for ongoing care, financial hardship, frequent visits to the ED, and high likelihood for hospital readmission.

INTERPROFESSIONAL COLLABORATION PROCESS EVALUATION

Evaluation of the IPCP model for patient care decisions by clinicians, staff, and volunteers is provided by faculty from UAB's School of Public Health. Although patient outcome and satisfaction data are also collected on-site, evaluation of team processes focuses on satisfaction with functioning of the IPCP model by personnel from the aligned agencies. Both qualitative and quantitative evaluation methods are used to examine team-based care. Qualitative measures include annual structured interviews with individual clinicians as well as open-ended questions on various survey instruments. Data derived from Likert-scale items supply quantitative data on IPCP. Surveys are distributed to clinicians, volunteers, and M-POWER staff either electronically or in paper format depending on the setting and appropriateness for respondents. Annual structured interviews are scheduled via e-mail and conducted with 15 clinicians by telephone. For reliability purposes, 1 evaluator conducts all interviews. These last between 20 and 60 minutes, depending on the extent of detail provided. Quantitative measures include the Assessment of Interprofessional Team Collaboration Scale (AITCS)⁵ and the investigator-developed daily End-of-Clinic Clinician Surveys and Coaching Session Satisfaction Surveys. The 37-item AITCS includes 3 subscales—partnership/shared decision making, cooperation, and coordination. Reliability of the subscales ranges from 0.80 to 0.97, and overall reliability of the AITCS is 0.98.

Qualitative and quantitative findings

Knowledge of IPCP

Initial structured interviews conducted by a member of the evaluation team consisted

of 3 multifaceted questions to assess baseline knowledge and experience with IPCP. When asked to define IPCP, approximately half (7 of 15) of the clinicians had no formal introduction to the IPCP care model prior to working at the PATH Clinic. For others, the PATH Clinic provided the first opportunity to apply IPCP in a clinical setting. Clinicians who were familiar with the IPCP model obtained their knowledge through various means, including literature, grant writing, conferences, and coursework. However, no consistent sources of IPCP education were identified. Consequently, baseline familiarity of IPCP model core competencies was minimal. (Subsequently, regular coaching sessions provided many opportunities to teach and discuss each IPCP competency in detail.)

Roles and responsibilities

Structured interviews and open-ended questionnaires revealed some role confusion among a number of clinicians and staff. In general, clinician roles and responsibilities were well understood. However, M-POWER volunteers and staff members communicated that the roles and responsibilities of UAB grant-funded administrative staff were ambiguous. Likewise, UAB clinicians were unclear about the roles and responsibilities of M-POWER volunteers and staff. An unexpected source of confusion was a lack of understanding and blending of NP roles and responsibilities with other clinic roles, particularly with physician roles. Team members from both M-POWER and UAB remarked that role and responsibility confusion among clinicians, staff, and volunteers led to lower levels of care coordination and inefficient use of team and clinic resources at the outset of the partnership.

Patient care coordination

Quantitative surveys produced similar findings with respect to patient care coordination. The AITCS, a 37-item Likert scale survey tool, was administered in May 2013 to team members to investigate various aspects of team functioning, dynamics, and

performance through measures of partnership/shared decision making, cooperation, and care coordination.⁵ Items were rated on a scale from 1 to 5 with 1 corresponding to "never" and 5 corresponding to "always." Compared with the decision-making and cooperation mean score range of 3.71 to 4.60, coordination measures received lower mean scores and consequently a lower mean score range (2.73-3.87), indicating further opportunity to improve care coordination. Mean scores from selected items from each of the 3 sections (partnership/shared decision making, cooperation, and coordination measures) are outlined in Table 1 and illustrate a trend of lower scores for coordination measures. Overall, coordination measures were rated lower than measures for shared decision making, partnership, and cooperation.

Along with the AITCS, interprofessional collaboration and team decision making were measured by daily surveys that were collected during each afternoon postconference from November 2012 to December 2013. A 7-point Likert scale was used to rate agreement with 5 items related to team communication, integration of various professional perspectives, patient care coordination, and satisfaction with decisions and the decision-making process. Mean values for team patient care coordination were lower than other items during the first year of grant funding, which suggested that patient care coordination was not as efficient as possible. In general, scores on the daily clinician surveys were consistent across days and approached ceiling, indicating that factors other than those being measured were contributing to an artificially high assessment of team functioning.

After reviewing team process evaluation reports, the interprofessional and interagency leadership team identified areas of potential improvement. To address the lower levels of care coordination reflected both qualitatively and quantitatively via survey and interview responses, an RN care manager position was created. To improve care coordination, clinic flow, efficiency, and the pharmaceutical dispensary process, a PAP coordinator was hired to facilitate patient enrollment in the

Table 1. Descriptive Statistics of Selected Interprofessional Measures From AITCS

Domain	Item ^a	N	Mean	Standard Deviation	Median
Partnership and shared decision making	... team members meet and discuss patient care on regular basis	15	4.60	0.51	5.0
	... the focus of teamwork is consistently the patient	15	4.60	0.83	5.0
	... all members of our team are involved in goal setting for each patient	15	3.73	0.80	4.0
	... team members establish deadlines for steps and outcome markers in regard to patient care	14	3.71	0.83	4.0
Cooperation	... create a cooperative atmosphere among the members when addressing patient situations	15	4.53	0.64	5.0
	... help and support each other	15	4.47	0.74	5.0
	... establish a sense of trust among the team members	15	4.47	0.74	5.0
	... understand the boundaries of what each other can do	15	3.93	0.88	4.0
Coordination	... apply a unique definition of interprofessional collaborative practice to practice setting	15	3.87	0.92	4.0
	... use and agree upon process to resolve issues	15	3.87	0.83	4.0
	... select the leader for our team	15	2.93	1.22	3.0
	... team members openly support inclusion of the patient in their team meetings	15	2.73	1.49	2.0

^aAll items begin with the same question stem, "When we are working as a team, all of my team members . . ."

PAP programs that provide free or reduced cost medications to qualified patients.

Early results suggest that the creation of the RN care manager and PAP coordinator positions (January 2014) improved communication between teams across days, enhanced use of available resources, and improved patient flow. These benefits enabled clinic leadership to address other issues, such as the lack of walk-in appointments. (As a result, proposed scheduling changes will al-

low for several walk-in appointments each clinic day.) Evaluation of interprofessional collaboration and team provision of care continues through annual structured interviews, follow-up surveys, and the administration of other tools/instruments to measure IPCP and its associated competencies.

Limitations to IPCP model evaluation include team composition variations on different clinic days, skew on survey responses, incomplete participation, time

constraints, staff turnover (ie, clinicians, volunteers, staff members), and a scarcity of instruments that specifically measure the core competencies for IPCP, as established by the Interprofessional Education Consortium, in a primary care setting.¹ Further observational, qualitative, and quantitative analyses of the differences between clinic days could reveal subtle differentiating characteristics that contribute to higher levels of team functioning, performance, and efficiency on particular days or with specific team structures. Future evaluation plans include analyzing the alignment organized around a nurse-led IPCP model and its effect on this vulnerable population's health and chronic disease management, as well as the impact on health care costs and cost effectiveness.

STRENGTHS AND CHALLENGES FOR FUTURE ALIGNMENT

A significant strength of this unique academic-practice alignment is the mutual goal of providing interprofessional, team-based care to a medically needy population. Despite the challenges and day-to-day frustrations of working with limited resources and with a population in desperate need of care, this shared goal is evident. A second major strength is increased competence in the 4 domains of IPCP—values and ethics; roles and responsibilities; interprofessional communication; and teams and teamwork.⁶ Other strengths include the ability to provide care in a team-based environment, learning how to utilize each other's skills and abilities to the fullest, and ready access to mental health practitioners, the dietitian, and the optometrist within the clinic. Institutional support from the nonprofit agency, school of nursing, and academic health center has added important resources—human, cultural, financial, and technical.

A number of challenges have been encountered through this partnership. Adjustments have been made to remain flexible and goal-focused. Internal challenges have included the culture clash of academic health center regulations and operational methods in-

serted into a small, community-based organization; ongoing staff turnover; limited clinic space; struggles with operationalizing use of the EMR; and lack of permanent dispensary personnel and medications to dispense. Environmental challenges have also occurred, including the closure of the county-owned indigent hospital in December 2012. This left even larger numbers of vulnerable patients in Birmingham without access to care. Contextual issues such as operational and financial sustainability are the subject of ongoing collaborative planning by all partners. Concerns include how to continue to provide free care and medications without grant support, limited budgets, and limited financial resources. This is particularly true because, for various complex reasons related to our vulnerable patient population, initial data have not yet shown a cost reduction to UAB Hospital for patients of the clinic.

LESSONS LEARNED AND FUTURE PLANS

Lessons learned from the IPCP model include the importance of remaining goal-focused, the cruciality of providing affirmation, the essential need for achieving continuous operational quality improvement, the importance of care coordination, and the value of reliable data and analytics. On the basis of the evaluation data, 3 implications for nursing leadership practice are evident. First is the need for regular refocusing on the partnership goal to keep team members aligned and engaged in accomplishing the interprofessional objectives. Second, although caring for medically needy populations is gratifying for many, it is also challenging and complex work. Partners need to be thanked often for their service and commitment. Third, the interprofessional model of care is different from traditional care models by design. However, most established processes of care have not been designed or validated in this new model. This creates the need for an additional layer of quality measurement and process improvement. The importance of care coordination for this patient population cannot be overstated. Challenges exist around problems with

missed new and return appointments, medication adherence, patient education, literacy, and cultural competency. Finally, there are important questions of quality and overall cost that extend beyond the walls of the PATH Clinic itself.

The next steps associated with these implications include the use of the tools of population health. Besides interprofessional collaboration itself, these tools include population identification, risk stratification, evidence-based practice guidelines, patient self-management education, process and outcomes measurement, and expanded reporting and feedback to team members.⁶ Reliable data and accessible analytics can enable targeted care coordination, which has the potential to contribute to these goals by increasing clinic visit rates, reducing inappropriate use of EDs, preventing hospital readmissions, and increasing patient engagement and alignment among partners.

CONCLUSION

This article describes the collaboration of 3 diverse organizations in 1 community, with each contributing its resources, skills, and expertise to provide a vulnerable population with necessary health care services. Ongoing evaluation data are providing meaningful qualitative and quantitative measures, which will be used to improve the program.

The nurse-driven collaboration between UAB SON, M-POWER Ministries, and the UAB Health System is an excellent example of the power of aligning interagency and interprofessional academic-practice partners. This collaboration models adherence to the guiding principles of the American Association of Colleges of Nursing-American Organization of Nurse Executives Task Force on Academic-Practice Partnerships,⁷ while enabling the provision of health care services to significant numbers of medically needy patients and focusing on the larger policy issue of population health for vulnerable patients. A significant outcome of this model is that clinicians and students from various health professions are learning to provide care as an interprofessional team. Potential (and projected) outcomes include prevention of costly hospital readmissions, as well as provision of a patient-identified alternative to ED visits for primary care and minor acute illnesses. Lessons continue to be learned about this innovative approach to providing chronic disease management. New solutions will emerge as nurses, nursing administrators, and others continue to work together to lead change and advance health for vulnerable populations. Although nursing is well positioned to lead these efforts, the health and health care of vulnerable populations is a responsibility that must be shared and assumed by multiple community partners, collaborating effectively to achieve lasting change in health outcomes.

REFERENCES

1. Interprofessional Education Collaborative Expert Panel. *Core Competencies for Interprofessional Collaborative Practice: Report of an Expert Panel*. Washington, DC: Interprofessional Education Collaborative; 2011.
2. World Health Organization. *Framework for Action on Interprofessional Education & Collaborative Practice (WHO/HRH/HPN/10.3)*. Geneva, Switzerland: World Health Organization; 2010.
3. US Census Bureau. State and county quick-facts. <http://quickfacts.census.gov/qfd/states/01000.html>. Accessed June 15, 2014.
4. Health Resources and Services Administration. Shortage. <http://www.hrsa.gov/shortage>. Accessed May 22, 2014.
5. Orchard CA, King GA, Khalili H, Bezzina MB. Assessment of interprofessional team collaboration scale (AITCS): development and testing of the instrument. *J Contin Educ Health Prof*. 2012;32(1): 58-67.
6. Reifsnyder J, Yeo TP. Continuity of care. In: Nash DB, Reifsnyder J, Fabius RJ, Pracilio VP, eds. *Population Health: Creating a Culture of Wellness*. Sudbury, MA: Jones and Bartlett Learning; 2011:63-84.
7. American Association of Colleges of Nursing-American Organization of Nurse Executives Academic-Practice Partnerships Steering Committee. *AACN-AONE Task Force on Academic-Practice Partnerships Guiding Principles*. Washington, DC: American Association of Colleges of Nursing; 2012.