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Genomics Nursing Faculty Champion Initiative

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Abstract

Nurse faculty are challenged to keep up with the emerging and fast-paced field of genomics and the mandate to prepare the nursing workforce to be able to translate genomic research advances into routine clinical care. Using Faculty Champions and other options, the initiative stimulated curriculum development and promoted genomics curriculum integration. The authors summarize this yearlong initiative for undergraduate and graduate nursing faculty.

Genomic information has the potential to significantly influence healthcare.¹ However, the successful use of genomics relies on a prepared workforce that can identify values and limitations of advances. Historically, progress of genomic nursing education has been slow and inadequate. To address this deficit, the US Genetic/Genomic Nursing Competency Initiative was established.² Because genomics has relevance for all nurses throughout the entire health continuum, there are organizational, system infrastructure, and policy implications necessitating a major change process.³ Barriers to change exist that represent both challenges and opportunities: challenges associated with the nursing workforce size and diversity, requiring embellishment and expansion of existing initiatives and a centralized, evidence-based approach, and opportunities because nurses are central to healthcare delivery and are effective change agents as illustrated by the Quality & Safety Initiative for Nursing and Geriatric education initiatives.^{4,5} Nursing faculty are a cornerstone of the overall effort to prepare the healthcare workforce in genomics.⁶

Two factors have contributed to enhanced recognition by faculty of the importance of genomic content in nursing education. Essential genetic/genomic nursing competencies, curricular guidelines, and outcome indicators were created, endorsed, and now provide the framework for nursing education.⁷ These competencies guide academic curriculum content and learning activities. The competencies include professional responsibilities and practice recommendations as defined by the Competency Consensus Panel with Outcome Indicators

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consisting of Specific Areas of Knowledge and Clinical Performance Indicators. The competencies were used as the basis for integration of genomics into the revision of the American Association Colleges of Nursing (AACN) Essentials of Baccalaureate Education for Professional Nursing Practice and The Essentials of Master's Education in Nursing.^{8,9}

The AACN Essentials provide the criteria used by the Commission on Collegiate Nursing Education (CCNE) accreditation standards for baccalaureate programs implemented in 2010, and master's program accreditation standards will follow. The result of these regulatory actions was a mandate that schools of nursing that wanted to maintain their accreditation had to integrate genomics content. These mandates necessitated the attention of every nursing school accredited by CCNE, creating an impetus for curricular change.

An assessment of readiness to integrate genomic curriculum content was previously conducted with 161 participants in workshops about integrating genomics into nursing curricula. This study found that 60% intended to adopt genomic curriculum changes within 6 months and 68% strongly agreed that it was time to start teaching genetics/genomics.¹⁰ Furthermore, most (71%) indicated that their personal genomic knowledge base was low or very low. These data supported the hypothesis that schools of nursing would be receptive to support efforts to increase their capacity to integrate genomics into the curriculum.

The Diffusion of Innovations (DOI) theory describes the process of social change.¹¹ Research on DOI indicates that disseminating, implementing, and sustaining the adoption of new innovations depend on many factors; critical among them is the presence of a sufficiently knowledgeable and skillful workforce (ie, faculty).¹¹ Therefore, the rate of progress for incorporating genomic advances throughout the continuum of healthcare not only depends on technology but also is hinged on faculty expertise in genomics to translate findings into education and, ultimately, practice.

The DOI theory provides a conceptual framework for considering pathways for a series of interventions likely to influence whether nursing faculty become interested in and adopt genomic innovations into curricula.¹¹ Although diffusion of new ideas, in this case genomics, is often a slow process, taking an average of 17 to 20 years, there is accumulating evidence that the adoption process can be accelerated using pathways of influence including champions in an organization.^{12,13} This initiative was created to prepare Faculty Champions to assist in integrating genomic information into curricula.

Methods

The primary aim of this initiative was to recruit self-selected nursing Faculty Champions for a yearlong genomic education and support intervention to act as change agents in their nursing schools. The aims included (1) determining whether training nursing Faculty Champions influenced genomic curriculum integration in entry-level nursing education; (2) evaluating nursing faculty knowledge, attitudes, practices, receptivity, confidence, and competency as a result of training; and (3) assessing academic leadership perspectives (ie, deans) about the selection and value of using Faculty Champions to facilitate genomic curriculum integration.

Eligibility

Any nursing program/school with a baccalaureate program scheduled for the 2010-2011 CCNE accreditation review was eligible to participate.

Participant Recruitment and Selection

Invitations outlining the goals for the Faculty Champion Initiative, instructions for online application, and the yearlong participant requirements were e-mailed to 160 nursing schools scheduled for the 2010-2011 CCNE accreditation review. This recruitment cohort was considered because this was the 1st year in which the new AACN Baccalaureate Essentials, which included genomics, were integrated into CCNE accreditation expectations. Applicants were self-selected or selected by their school. Targeting faculty with no genetic expertise, this pilot initiative was intended to evaluate whether they could be sufficiently prepared to assist in genomic curriculum integration, thereby increasing the capacity of nursing schools to prepare nurses in genomics.

Letters from school leadership were required to verify support from their school of nursing for participation and commitment to the yearlong training initiative. Applicants provided statements on why they were interested in being a Faculty Champion, personal objectives, and previous curriculum change experience. An expert selection committee consisting of academic and genomic experts reviewed and scored applications. Two selection committee members scored each application, and the average of both scores was used as the final applicant score. Scores were based on the substance of the letter of support; whether the applicant's school listed as a Historically Black Colleges and Universities, Hispanic Serving Institutions, or Minority Serving Institution (a requirement from the funding source); whether the applicant's school was scheduled for accreditation review in 2010-2011; content of the applicant's statements; personal objectives and previous curriculum change experience; and previous genetics training and experience (highest scores were awarded to those with no genetic training). Maximum score was 44 points. Fifty-one applications were received, and the top 20 scoring applicants were selected. Each Faculty Champion received written notification of acceptance or nonacceptance.

Evaluation Instruments

Evaluation of the initiative consisted of multiple assessments before, during, and after the intervention.

Personal Needs Assessment

The needs assessment survey included questions assessing Faculty Champion personal learning needs, topics they wanted to learn more about, useful resources, identified barriers, and interest in having access to a social networking site for communication. The 9-item online survey was developed by the project team to assess faculty assessment of readiness for change.¹⁰ This was administered upon acceptance into the program and took 15 minutes to complete.

School Assessment

Questions in this survey were developed by Hetteberg et al¹⁴ and used with permission. The survey assessed the school's current genomic curriculum content, Faculty Champion knowledge, and opinion about the implications of genomics to healthcare and nursing practice.¹⁴ The survey consisted of 5 sections and 47 items that assessed attitudes about genomic curriculum integration, general entry-level (RN preparatory) nursing program information, extent of genomics curricular content, and demographics. The survey was administered upon acceptance into the program and in the postintervention period.

Nursing School–Specific Action Plans

Faculty Champions created action plans describing yearlong efforts for their specific school. A template developed by the project team provided instructions to consider 5 areas when establishing their action plan: curriculum genomic content assessment, faculty genomic knowledge needs assessment, personal development, faculty development, and curriculum genomic integration. Faculty Champions were instructed to consider the entire scope of nursing faculty at their schools including researchers, academic faculty, clinical faculty, adjunct faculty, interdisciplinary faculty, and clinical preceptors.

For each area, faculty were to list objectives that they planned to achieve, strategies or methods to be used to achieve identified aims, and a timeline allocated to accomplish tasks. If there was an area not needed to be included in their action plan, they could indicate "not applicable" and specify why not. Additional areas not included in the above categories could be added. Champions were encouraged to work with faculty at their school to establish the institutional-specific action plans. These action plans provided a starting point for the Faculty Champions to assess, plan interventions, evaluate, and reassess outcomes. Action plan quarterly updates were submitted to the project team, facilitating progress monitoring and/or needs for assistance with barriers encountered. Faculty Champions periodically provided 5-minute updates of their efforts, with time for consultation and questions during monthly conference calls.

Faculty Champion Intervention

The DOI indicates that critical elements of adoption include awareness, attitudes, knowledge of the innovation, and the social system in which the innovation is being considered for adoption. Therefore, the Faculty Champion Interventions focused on education to expand personal genomic knowledge and teaching capacity, providing resources and support to meet the challenge of incorporating genomics into the curriculum, reviewing methods of curriculum integration, and finding solutions for overcoming barriers to curricular change. The intervention included in-person meetings, monthly educational and discussion conference calls including Web conferencing, social networking, and orientation to resources to facilitate genomic integration into the curriculum.

Introductory Meeting

Funding was provided for travel of the Faculty Champions to participate in a kick-off meeting. The acting director of the National Human Genome Research Institute provided the

keynote address, "Bridging the Gap Between Genome Research and Clinical Care: What Do Nursing Faculty Really Need to Know?" Providing background for the purpose of the Faculty Champion Initiative were talks about basic genomic concepts, implications of genomics for nursing practice/education, and resources for evaluating the nursing curriculum. A genetics curriculum checklist to be used by Faculty Champions when assessing their specific programs was provided.¹⁴

A panel of speakers presented models of curriculum integration, including stand-alone course, shared courseware, interdisciplinary model, and integrated curriculum model. Most presentations were also offered by webinar and can be viewed at http://www.genome.gov/27535172. Finally, where faculty could locate resources to teach genomics was presented, including the Genetics/Genomics Competency Center for Education (G2C2, http://www.g-2-c-2.org/), the Web-based courses offered by Cincinnati Children's Hospital (http:// www.cincinnatichildrens.org/ed/clinical/gpnf/default.htm), and the Global Genetics and Genomics Community (G3C, http://www.g-3-c.com/) online unfolding case studies. The meeting concluded with a discussion of the role of Faculty Champions and next steps.

Support Provided

Experts were recruited from the genomics nursing specialty community to join in a Consultation Directory. The roles and services of these experts included being available to Faculty Champions by e-mail and telephone to reply to questions about integrating genomic topics into curricula, reviewing and commenting on educational materials under development, posting on the social networking site, participating in prearranged conference calls with the Faculty Champions, and presenting on topics related to the integration of genomics into nursing courses and educational programs.

Realization Meeting

Faculty Champions met at the conclusion of the intervention period to present the strategies they used to increase the amount and quality of the genomic content in their academic curriculum. This in-person meeting focused on priorities, progress, problems, and recommendations for next steps.

Leadership Qualitative Outcome Interviews

After the 1-year intervention period, qualitative interviews with 19 faculty, deans, and program directors who had provided the original letter of support for the program applicant were conducted by conference calls to further assess variables influencing Faculty Champion success. These interviews were aimed at assessing perspectives on accomplishments and outcomes associated with the use of this intervention model. They were asked to report on the state of genomic curriculum integration, perspectives on the accomplishments of their Faculty Champion, factors that interfered with their Faculty Champion's role, the level of support provided to the Faculty Champion, and any additional recommendations. Two project team members participated in each telephone interview, 1 conducting the interview and the 2nd documenting the discussion; interviews were not audio recorded. Documentation from each interview was uploaded into QSR NVivo8 software for qualitative analysis and theme identification.

Results

Demographics

Faculty Champions came from across the United States representing the following regions: Northeast, n = 5; Midwest, n = 7; Southeast, n = 3; and Southwest, n = 5. Northwest was the only region unrepresented. All were women, 86% were white, and most had a doctoral degree (65%). The number of years as a nursing faculty was wide-ranging (2-38 years), with a mean of 13.8 years. Nursing programs varied in size from 20 to 340 entry-level nursing graduates per year, with a mean of 124 graduates/year and a median of 85 graduates/year. One Faculty Champion was starting a new nursing program.

Personal Needs Assessment Survey

Self-reported genetic/genomic knowledge was identified as moderate or below from most participants (ie, very low, 4.3%; low, 30.4%; or moderate, 56.5%). Perceived barriers to their future success in genomics curriculum integration included faculty lack of knowledge about genetics/genomics (91%), curriculum too full (83%), not high enough priority (48%), and not covered on NCLEX (22%). Most Faculty Champions expressed a need to learn more about the genetics of common diseases (89%), pharmacogenomics (74%), basic genetics (42%), and being a change agent (26%). These data were used by the project team to guide education topics for Faculty Champions. Ninety-five percent expressed interest in having access to a social networking site; therefore, a site was used to provide moderated topic specific sessions. Table 1 summarizes the topics presented on the calls and discussed via the Internet.

School Assessment Surveys

Baseline assessment revealed that 90% of programs did not have a genomic curricular thread, although 95% of faculty agreed or strongly agreed that preparing nurses to use such information is an important role of nurse educators. One hundred percent felt that genomic content in their curriculum needed to be increased, and 74% planned to do so within 6 months.

The same survey was repeated at the end of the yearlong intervention program. There was an improvement in curriculum integration, with 58% reporting a genomic curriculum thread compared with 10% at baseline. All faculty agreed (21%) or strongly agreed (79%) that preparing nurses to use such information is an important role of nurse educators and had already begun curriculum changes or planned to do so within the next 6 months (95%). At the completion of the program, all faculty expressed a moderate (74%) or high (26%) level of personal genomic knowledge.

Action Plans

School-specific action plans and quarterly reports completed by the Faculty Champions provided a status report of more than 100 activities undertaken and the continuing progress made throughout the year. Each activity was tracked for achievement, with percentages representing the proportion of faculty completing the activity. Most (90%) identified assessment of faculty knowledge/needs survey as a priority, with 71% completing that goal.

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There were several ways the Faculty Champions chose to proceed with curriculum genomic content assessment, including faculty personal genomic knowledge surveys (90%), curriculum surveys (63%), curriculum mapping (32%), interviews with faculty (26%), and detailed syllabi reviews (26%). Personal development consisted primarily of using online continuing education (CE) courses (53%), attending genetics meetings (32%), reviewing provided resources (32%), and conducting literature reviews (26%). Faculty development for school colleagues included discussions at faculty meetings (58%), genetics workshops (32%), and development of CE materials (32%). Some (26%) created an advisory committee to guide curriculum genomic integration.

Faculty Champion Retention

Changes in Faculty Champions occurred more frequently than expected. School leadership (deans/program directors) had assumed that when a commitment was made and funding was provided that selected participants would complete the program. However, 3 Faculty Champions withdrew from the program and had to be replaced. In all 3 instances, the nursing school's leadership had to be notified by the project team that the faculty member was not completing the program. One additional Faculty Champion was unresponsive to meeting timelines, did not participate in monthly conference calls, and did not provide required reports, so that faculty member did not successfully complete the program.

Realization Meeting

Champions completing the program contributed to the implementation of genomic content in the undergraduate curriculum in a variety of ways; they reported these at an in-person meeting after the 1-year intervention period. The approach used most frequently was surveys/interviews to assess faculty knowledge and current genomic content already infused in nursing curriculum. These benchmark data were consistent across all schools and revealed limited faculty genomic educational preparation, with a minimal to moderate knowledge base amongst current faculty members.

Strategies used to increase faculty member genomic competency that facilitated genomic content integration into nursing undergraduate courses included building task forces, creating faculty resource Web sites, developing and dispersing informative monthly newsletters, and identifying key stakeholders in their institutions who could support the provision of time and financial resources to achieve program objectives. A summary of common strategies used by the Faculty Champions is provided in Table 2.

Leadership Qualitative Outcome Interviews

The characteristics identified as facilitating success of the Faculty Champion by deans and program directors are listed in Table 3 and include motivation, leadership capacity, knowledge, and personality characteristics. For example, 1 leader commented, "Carefully consider the selection of the representative. The more seasoned senior faculty may not be the best person. You need to find someone who will embrace the topic and with the time and energy to invest in the initiative." All leaders were supportive of continuing with this type of intervention with some recommended changes, with 1 stating, "This is a start, but you need to keep this going." Recommended changes included (1) creation of centralized talent, (2)

need for more than 1 person to effect change, (3) creation of regional champions, (4) creation of regional workshops, and (5) release time and financial support for the Faculty Champion. A related finding was that most were willing to support faculty with release time or additional financial support but had not been approached by the faculty with such a request. Deans and program directors also requested creation of a genomics education course targeted at their own learning needs.

Discussion

Using DOI theory and the power of champions within a network context informed the design and evaluation of an ordered and structured intervention to accelerate nursing faculty attitudes, receptivity, and integration of genomic content into nursing curricula. Efforts such as this are critical for planning effective faculty support and dissemination of genomic educational resources and for making the best use of limited training time and financial resources. Faculty implemented a number of strategies to increase the genomic competency of their faculty, including newsletters, educational workshops, development of online modules, integration of school-wide genomic blackboard content, as well as engaging in genomic focused research.

Several challenges emerged over the course of the program. First, there were varying faculty appointments, with some being 9 months and others being full year. Although all faculty and their leadership agreed at the time of application to an entire yearlong commitment, a large number of faculty substantially decreased their participation during the summer months. In light of this finding, the program length, timing (ie, optimally 9-month intervention program), and assessment of the level of commitment need to be considered.

Faculty commitment also varied widely, with 3 faculty needing replacement. This was especially disappointing given the competitive nature of the application process and the motivation to participate from some faculty whose application did not score high enough to be admitted to the program. A more robust application process including faculty interviews would be valuable to further assess commitment. In addition, more intense engagement with the school leadership may enhance commitment and communication, for example, through periodic in-person or virtual site visits. Last, consideration needs to be given to identifying meaningful ramifications for those schools that commit to the program but do not follow-through.

The team underestimated the level of support that faculty required to make adequate progress in the program. Most faculty were unable to meet deadlines or keep track of the forms or program schedule. Seven of the 20 action plans (35%) had significant weaknesses that required individual work on the part of the team to help faculty to revise the plan. Future programs will require clerical support to logistically support faculty. In addition, use of virtual site visits will also be a vehicle in which to assist faculty and their school in developing a robust plan for genomic curriculum integration. Other models of support for Faculty Champions may be needed, such as regional workshops or use of additional education methods to successfully enhance champion success. Consideration of the identified characteristics of the individual Faculty Champion and recommendations from the

deans and program directors is valuable in advancing this model as a mechanism to enhance genomic curriculum integration.

Conclusion

There are more than 1,600 nursing programs accredited by CCNE for baccalaureate-level preparation. Since 2010, all nursing schools undergoing accreditation review have been required to meet the 2008 Essentials for Baccalaureate Education for Professional Nursing Practice,⁸ which includes genomics, to maintain their accreditation status. This small pilot project suggests that with minor modifications, the Faculty Champion model is an effective strategy to assist faculty to integrate genomics into the curriculum. Next steps might consist of a randomized controlled trial comparing online faculty education, traditional educational workshops, and the Faculty Champion model. Evaluation would need to include a cost assessment to ascertain which strategy is most cost effective and more realistically achievable to accelerate genomic nursing curriculum integration efforts. Faculty Champions are an important resource for advancing genomics curriculum integration.

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Table 1

Faculty Champion Monthly Conference Calls and Moderated Sessions

Conference call topics

- Models of genetic/genomic curriculum integration
- Evaluating the genetic/genomic content in your curriculum
- Basic genetics and genomics
- Genetics/genomics of common disease: diabetes mellitus
- Being an agent of change for genetics/genomics
- Genetics/genomics of common disease: cancer
- Genetics/genomics of common disease: heart disease
- Genetics/genomics of common disease: psychiatric illness
- Moderated sessions

Stand-alone genetics/genomics course

- Integrated genetics/genomics course
- Interdisciplinary genetics/genomics course

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Table 2

FC (N = 20) Realization Meeting Progress Highlights

| | | Identified in Action Plan by Number of FCs, n | Completed Activity Plan by Number of FCs, n | |
|--|--|---|---|--|
| Торіс | Examples | (%) | (%) | |
| Determine existing genomic content | Faculty: survey of personal genomic knowledge | 17 (90) | 12 (71) | |
| | Curriculum surveys | 12 (63) | 10 (83) | |
| | Curriculum mapping | 6 (32) | 5 (83) | |
| | Faculty reviews | 5 (26) | 5 (100) | |
| | Syllabus interviews | 5 (26) | 5 (100) | |
| | Worked with curriculum committee meetings | 5 (26) | 4 (80) | |
| Leadership persuasion models | Faculty meeting presentations/discussions | 11 (58) | 9 (82) | |
| | Expert advisory group assembled | 5 (26) | 3 (60) | |
| | Solicited funding for genomic education projects | 3 (16) | 1 (33) | |
| Novel approaches used to increase | Workshops provided for colleagues/others | 6 (32) | 4 (67) | |
| genomic awareness and adoption by colleagues | CE program materials developed | 6 (32) | 3 (50) | |
| | Newsletters | 4 (21) | 2 (50) | |
| | Blackboard genomic content incorporation | 3 (16) | 1 (33) | |
| | Incorporated genomic factors in nursing research | 1 (5) | 0 (0) | |

Abbreviation: FC, Faculty Champion.

Table 3

Characteristics of the Faculty Champion That Facilitate Success

| Motivation | |
|--|--|
| Committed | |
| Interested | |
| Passionate | |
| Proactive | |
| Understands the charge and empowered by that | |
| Leadership capacity | |
| Accepted/respected by faculty | |
| Agent of change | |
| Credibility within the organization | |
| Follow-through/known to get things done | |
| Leader of the pack | |
| Positional power | |
| Selection by leadership carefully considered | |
| Knowledge | |
| Knowledgeable about environmental influences | |
| Knowledgeable about implications of the topic | |
| Political savvy | |
| Responsibility for receiving and sharing knowledge | |
| Personality characteristics | |
| Attentive to assignments | |
| Capable | |
| Creative | |
| Enthusiastic, excited, energized | |
| Facilitator/helps others not get overwhelmed | |
| Nonthreatening | |
| Workhorse | |