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Preparing nurses to intervene in the tobacco epidemic: Developing a model for faculty development and curriculum redesign

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ABSTRACT

As the largest group of health professionals, nurses have a tremendous potential to help curb the tobacco epidemic. However, studies conducted across a range of global settings continue to indicate that both practicing nurses and nursing student have limited knowledge, skills and confidence needed to implement evidence-based tobacco cessation interventions. A contributing factor is the limited inclusion of tobacco control content in nursing curricula. Additionally, there is limited understanding of nurse educators' knowledge and perceptions about teaching tobacco dependence content. This paper presents the Loma Linda University School of Nursing's concurrent experience with both faculty development and curriculum redesign in the area of tobacco dependence prevention and treatment. An internal survey was administered at baseline and at 2-year follow-up to assess faculty's knowledge, perceptions and practices related to teaching tobacco dependence content and skills ($n = 42$). Faculty and curriculum development strategies and resources utilized, evaluation findings and subsequent lessons learned are described. The findings have implications for nursing programs seeking to enhance their curricula and commitment to ensuring that their graduates are prepared to provide evidence-based tobacco cessation interventions with each patient they encounter.

1. Background

Tobacco use is the leading cause of preventable death worldwide; accounting for nearly 6 million deaths per year (World Health Organization, 2015). By 2030 the death toll from tobacco is projected to be 8 million people per year, with more than 80% of these deaths occurring in low- and middle-income countries (Eriksen et al., 2015; World Health Organization, 2015). In the United States (U.S.) alone, over 480,000 Americans experience a preventable, premature tobacco-related death each year (U.S. Department of Health and Human Services, 2014). Currently, it is estimated that 16.8% of all U.S. adults smoke, and when surveyed approximately 70% consistently report wanting to quit (Blackwell et al., 2014; Jamal et al., 2015). It is also estimated that most smokers (> 80%) are seen by a health care professional each year, yet in 2010, less than half (48.3%) reported being advised to quit during the encounter (Blackwell et al., 2014; Centers for Disease Control and Prevention, 2011). These findings highlight the gap between the current practice of health professionals and the recommended practice guidelines. For example, the U.S. Public Health Service-sponsored Clinical Practice Guideline, *Treating tobacco use and dependence, 2008 update,* recommends that dependence on tobacco/nicotine be treated as a chronic disease, and that all health care professionals should be prepared to assess and offer assistance with quitting at every patient visit using the "5 A's and 5 R's" (Fiore et al., 2008). (The 5 A's outline the five major tobacco dependence treatment intervention steps; Ask, Advise, Assess, Assist, and Arrange, and the 5 R's outline steps to take with patients who are

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not ready to quit; Relevance, Risks, Rewards, Roadblocks, and Repetition). Furthermore, Article 14 of the WHO Framework Convention on Tobacco Control (WHO FCTC), which has now been ratified by 180 countries, recommends that "…(t)obacco control and tobacco cessation should be incorporated into the training curricula of all health professionals…at both pre- and post-qualification levels and in continuous professional development." (2010, p.123).

As the largest group of healthcare professionals worldwide, nurses have tremendous potential to contribute to the reduction of tobacco use globally. A recent systematic review, which included studies from 13 high- and middle-income countries, found nurse-delivered smoking cessation interventions to be effective in helping smokers quit (Rice et al., 2013). The International Council of Nurses (ICN) recommends that tobacco use prevention and cessation should be integrated into nurses' practice (2012). However, numerous studies conducted across a wide range of settings, including Australia, Canada, China, Greece, Ireland, Japan, Lebanon, Morocco, Serbia and the United States, have explored both practicing nurses' and nursing students' knowledge, attitudes and practices related to tobacco control and consistently recommended that more education is needed to ensure that nurses have the knowledge, skills, and confidence needed to provide evidence-based smoking cessation interventions (Chalmers et al., 2002; Chan et al., 2007; Chandrakumar and Adams, 2015; Gorin, 2001; Jenkins and Ahijevych, 2003; Johnston et al., 2005; Merrill et al., 2010; Moxham et al., 2013; O'Donovan, 2009; Obtel et al., 2014; Patelarou et al., 2011; Saade et al., 2009; Sarna and Bialous, 2005; Sekijima et al., 2005; Wetta-Hall et al., 2005).

One of the main reasons cited for this lack of preparation is a paucity of tobacco control content in nursing curricula (Sarna and Bialous, 2005; Sarna et al., 2006, 2009). In 2001, a survey of baccalaureate and graduate nursing education in the U.S. demonstrated that nursing programs' curricula did not have sufficient content in tobacco dependence treatment, most specifically in the area of clinical tobacco cessation techniques (Wewers et al., 2004). Among the 909 schools surveyed, 97% reported spending 3 hours or less per curricular year on tobacco dependence treatment (Wewers et al., 2004). Similar findings have been found in more recent studies conducted on a state-level in the U.S., with specialty advanced practice programs, and across undergraduate schools of nursing in New Zealand, China, Japan, Korea, and the Philippines (Chan et al., 2008a; Heath et al., 2002; Hornberger and Edwards, 2004; Lenz, 2009; Price et al., 2008a, 2008b; Sarna et al., 2006; Wong and Stokes, 2011).

There is a growing body of studies focused on the development and evaluation of tobacco control curricula and educational interventions in schools of nursing (Butler et al., 2009; Chan et al., 2008b; Kelley et al., 2006; Lenz, 2009; Molina et al., 2012; Schmelz et al., 2010; Schwindt et al., 2014, 2016; Sejr and Osler, 2002; Sohn et al., 2012). These studies represent diverse settings, have utilized a range of formats including traditional classroom, web-based, and simulation-based, and provide a basis from which to establish the most effective educational strategies. While feasibility has been discussed in some of the reports, there has been minimal discussion in the literature on the actual process used to implement and integrate tobacco control education *throughout* a school of nursing's curricula. Thus, schools of nursing that are willing to engage in curriculum redesign to include tobacco-related content have little guidance from others' experience. This paper fills this literature gap. Additionally, while factors associated with faculty member's intention to integrate tobacco control education have been explored, faculty member's knowledge, practices and perceptions about current curricular content on tobacco dependence and related intervention skills remain relatively unknown (Heath and Crowell, 2007). In 2007, the Loma Linda University School of Nursing was one of four health professional schools that participated in a University-wide initiative to enhance tobacco dependence curricula, referred to as "Teach Tobacco Treatment (TTTx)". The primary goal of this professional development project was to facilitate faculty and curriculum development in the area of tobacco dependence education, with the ultimate goal of adequately preparing health professionals to provide tobacco dependence interventions appropriate to their discipline. Each school adapted this process to fit the characteristics and needs of their faculty and curriculum, and reports of these experiences have been published elsewhere (Arnett and Baba, 2011; Arnett et al., 2012).

This report will describe the Loma Linda University School of Nursing's experience redesigning its curriculum to include training and content in the areas of tobacco prevention and tobacco dependence treatment and will discuss lessons learned in relation to implementation of faculty and curriculum development. The specific aims of this phase of the project were to (1) assess faculty members' knowledge, perceptions and practices related to teaching tobacco dependence prevention and treatment; (2) assess tobacco dependence prevention and treatment content in the nursing curriculum; (3) provide tailored faculty development strategies and curriculum revision for tobacco dependence prevention and treatment; and (4) evaluate changes in curriculum and faculty knowledge, perceptions and practices related to teaching tobacco dependence prevention and treatment.

2. Methods

2.1. Stage 1- faculty and curriculum evaluation

After being presented with the overall vision and goals of the TTTx curriculum development project, the faculty voted to create a standing tobacco education committee, which included representatives from both the undergraduate and graduate programs. One of the first actions taken by the committee was to conduct a baseline internal survey among the faculty to assess their knowledge, perceptions and practices related to teaching tobacco dependence prevention and treatment in the curricula. The questionnaire used was originally developed by Davis et al. (2005) and had been modified and converted into an online survey format for the Loma Linda University School of Dentistry (Arnett and Baba, 2011). We further modified and adapted this online version into a 16-item questionnaire that reflected nursing practice and the nursing educational context. The survey assessed formal training in tobacco dependence treatment, teaching methods utilized, tobacco-related topics currently covered in courses taught, resources utilized by the faculty, assessment of student's tobacco-related skills, perceptions related to the delivery of tobacco dependence training, as well as suggested topics for faculty development.

In the Fall of 2008, an e-mail invitation which explained the purpose and study procedures was mailed to all faculty members employed at > 0.4 full time equivalents (FTE) ($n = 41$). The e-mail included a link to the online questionnaire, which was anonymous and voluntary. Informed consent was implied by clicking on the link and initiating the survey. *SurveyMonkey*, a web-based resource center was able to track and remind survey respondents without violating anonymity. Up to three e-mail reminders were sent at two-week intervals. Other recruitment strategies included flyers posted in strategic locations throughout the school, and regular reminder announcements in faculty meetings. All study procedures were reviewed by the sponsoring institution's Human Subjects Review Board and given exempt status.

Table 1
Overview of faculty and curriculum development strategies utilized.

Faculty Development Strategies	Curriculum Development Strategies
1 Identify key faculty champions	1 Develop tobacco-related competencies and educational goals for undergraduate program
2 Develop a faculty working group	2 Coordinate a curriculum review to identify gaps in tobacco-related content via survey and face-to-face meetings with individual course coordinators
3 Provide individual faculty champions with mentorship by experts in the field, and support for attendance at national and international professional meetings	3 Make curricular resources available to faculty including: a Chest Toolkit (http://tobaccodependence.chestnet.org) b Rx for Change (http://rxforchange.ucsf.edu) c Registered Nurses Association of Ontario *Nursing Faculty Education Guide* (http://tobaccofreernao.ca/sites/tobaccofreernao.ca) d Tobacco Free Nurses (www.tobaccofreenurses.org)
4 Provide workshops for faculty at large with the following key messages: a Genetics affects dependence b Regular smoking causes permanent changes to the brain c Tobacco dependence is a treatable chronic medical disease across the lifespan d Most smokers will require long-term treatment (1 year minimum) e Tobacco causes multi-system diseases f People want to quit smoking g Quit rates are more than doubled with counseling and medications h Evidence-based treatment guidelines are available i All healthcare professionals should be prepared to assist smokers to quit and stay quit	4 Develop and obtain approval of a content-specific curriculum map
5 Provide workshop on motivational interviewing for faculty at large	5 Incorporate tobacco use and treatment into care plan templates
6 Disseminate tobacco related resources to faculty including evidence-based practice guidelines	

2.2. Stage 2 – faculty and curriculum development initiatives

The survey findings were presented to the faculty and used by the committee to plan tailored faculty and curriculum development strategies (See Table 1). Faculty development strategies included coordination of two tobacco-related workshops presented by experts in the field, one for academic faculty (2009) and one tailored to clinical faculty (2010). In addition, the School of Nursing collaborated with the School of Pharmacy, located on the same campus, to offer a related seminar on motivational interviewing (2011). Concurrent to these workshops, faculty were made aware of and provided ready access to tobacco-related references, as well as patient education and curricular resources. Throughout the entire project, members of the tobacco education committee had meetings with individual faculty members to discuss the goals and rationale for the project, as well as to listen to and when possible address concerns (approximately 20 individual meetings were held).

Curriculum development activities included development of tobacco-related competencies and educational goals for the undergraduate program (2009), and a curriculum review (2010) to identify curricular gaps in tobacco-related content based on published recommendations (Table 1). The curriculum review included a written survey of tobacco-related content areas, face-to-face meetings with individual course coordinators, and follow-up sessions to provide curricular support when requested by faculty members.

2.3. Stage 3 – faculty and curriculum re-evaluation

The internal survey was re-administered between November 2010 – January 2011 to all faculty members employed at > 0.4 FTE ($n = 42$) to assess changes in faculty member's knowledge, perceptions and practices in relation to the baseline assessment. This follow-up survey also included six open response questions focused on evaluation of the specific faculty and curriculum development strategies utilized in this project, and suggestions for next steps. Both surveys were analyzed using SPSS Version 19 (IBM Corp, 2010). Categorical variables were described using frequency and percent of total, and mean and standard deviation for continuous variables. Groups were compared using Independent *t*-tests and Chi-square or Fisher's Exact Tests as appropriate, and significance is reported at an alpha level of 0.05. The open response questions were evaluated by committee members using an iterative approach in which responses to each question were read independently several times, major themes identified and discussed, and coding criteria was validated and refined through review and discussion among the team. The findings were then disseminated to the faculty via oral presentations during faculty meetings.

3. Results

The baseline survey conducted among the faculty members had a 100% response rate ($n = 41$). Seventy seven percent of participants identified their primary department as the undergraduate (baccalaureate) program, and 23% the graduate program. The faculty reported that they had limited formal training in the area of tobacco dependence; 41.5% reported having no formal training in tobacco dependence treatment, and 48.8% none in tobacco dependence prevention. The majority (84.6%) of faculty surveyed indicated they believed they would benefit from additional training in this area, and only 2.6% indicated they perceived the faculty as lacking interest and/or motivation to teach tobacco-related curriculum.

The findings from the baseline survey were presented to the faculty, and used by the tobacco education committee as a springboard for the curriculum and faculty development initiatives undertaken as outlined in Table 1. The workshops ($n = 3$) were conducted over a two-year period; all were well attended (> 95% of teaching faculty), and well received based on the continuing education evaluations.

3.1. Changes in faculty members' knowledge, perceptions and practices

The survey was re-administered two years after the baseline survey had been conducted to assess changes in faculty member's knowledge, perceptions and practices, at which time the response rate remained high (100%, $n = 42$[1]). Post implementation of the faculty and curriculum development strategies there was a significant decrease in the number of faculty members who reported having “no formal training” in the tobacco dependence *treatment*

[1] Faculty turnover was minimal during this period (< 1%), however, several new hires also completed survey.

(41.5% – 19%, $p = 0.026$), and though not significant, also a decrease in those indicating they had "no formal training" in tobacco dependence *prevention* (48.8% – 40%). Both at baseline and follow-up, a majority of the faculty believed that upon graduation students should be able to apply the recommendations of the U.S. *Clinical Practice Guideline*, including administration of the "5 A's" and the "5 R's", provide brief motivational interviewing, and discuss tobacco dependence treatment medications (See Table 2) (Fiore et al., 2008). Expectations for graduate student outcomes were higher than for baccalaureate across all areas surveyed. Specifically, at follow-up, there was a significant increase in the percentage of respondents who felt that the skills needed by nurses at the baccalaureate nursing level, should include brief motivational interviewing, from 77.5% to 92.9% ($p = 0.049$) (Table 2), however, there was a decrease in the percentage of respondents who felt that skills needed by these students should include exploring tobacco dependence treatment medications and adjusting recommendations/treatment plan as needed, from 20.0% to 7.2% ($p = 0.088$). All skills except "developing a detailed treatment plan," "exploring past treatment failures," and "exploring medications and adjusting plan as needed" for the baccalaureate level were endorsed by a majority of faculty members in both the baseline and follow-up surveys.

At baseline, there was a high level of uncertainty among the faculty about how our program actually incorporated tobacco dependence related material into the students' education. Only 17.1% believed that our students applied the "5 A's and 5 R's". However, at follow-up there were significant increases in awareness in terms of: (1) where in the curriculum tobacco dependence content was being taught (e.g. in several courses versus only in one course) (53.7% – 81%) ($p = 0.03$), (2) what student's tobacco dependence interventions included (e.g. 5 A's and 5 R's) (17.1% – 45.2%) ($p = 0.01$), and (3) who among faculty has expertise in tobacco dependence treatment (36.6% – 71.4%) ($p = 0.005$). However, in both the baseline and follow-up surveys a majority of faculty reported that in the past year they "never" or "seldom" evaluated students' clinical competency in relation to the seven tobacco-related skills outlined in Table 2 (Range in 2008 = 65 – 90%; Range in 2010 = 65.9 – 97.5%).

Using a 5-point Likert scale (1 = Not at all confident and 5 = Very confident), respondents were asked about their own level of confidence in relation to teaching the specific tobacco dependence treatment skills. At baseline, those that indicated that they were "confident" or "very confident" in a given skill ranged from 5.4% to 30.8% (See Table 3); and the overall mean score across all of the items was 2.78 ($SD = 1$). At follow-up there was an increase in the percentage of faculty members who reported that they were "confident" or "very confident" in all 7 skills (Table 3); however, there was no significant change in the overall mean confidence scores ($M = 2.76$, $SD = 1.2$) (Cronbach's alpha = 0.93).

At baseline, lack of time (classroom and clinical) (56.4%), and lack of resources (43.6%) were identified as the primary barriers to teaching tobacco dependence education. In the open-ended questions included in the follow-up survey, faculty members continued to cite lack of time as a barrier to teaching tobacco-related content. Other barriers identified included: (a) not knowing where to start to incorporate tobacco dependence in course, (b) lack of expertise, and (c) lack of follow through at clinical agencies (i.e. they do not routinely address smoking and/or tobacco use). However, at follow-up, using a 5-point Likert scale (1 = Strongly disagree to 5 = Strongly agree), there was a significant change in respondents' perceptions regarding the availability of resources for making tobacco dependence treatment referrals ($M = 3.17$ ($SD = 1.1$), $p = 0.04$), and faculty members' support for delivery of tobacco-dependent treatment in clinical settings ($M = 4.05$ ($SD = 0.8$), $p = 0.02$).

Twenty four respondents (57%) provided written responses to open-ended questions that asked them to describe the changes they had experienced in relation to their personal perspectives, interactions with clients, students and/or teaching, and two overarching themes emerged. First, faculty members reported an increased awareness of the problem and treatment options available. These comments focused on the neurobiology of tobacco dependence and effectiveness of medications, and can be characterized by this example, *"I now understand…that there is real HOPE out there if patients can have access to the appropriate treatment"* [italics added]. Second, multiple faculty members reported changes in their attitude toward patients who smoke, as exemplified by the following comments; *"I am more aware of the struggle and suffering…", "I'm less judgmental…", "I'm more compassionate…", and "I've begun to understand the power of addiction and [importance of] not think[ing] people can quit using willpower…."*

When asked to evaluate the faculty and curriculum development strategies that were used in this project the respondents reported that they found the following to be most helpful: (a) continuing education workshops; (b) exposure to experts in the field; (c) access to resources; and (d) the "persistent", "regular" and "frequent" communication (i.e. frequent reminders or updates on tobacco dependence education and curricular initiatives taking place within the school). When queried on what was least helpful, the most common responses included: (a) perceived pressure to make curriculum more "obese"; (b) lack of a curricular map or awareness of what was being covered in other courses; and (c) the "persistent" communication on this topic.

3.2. Curriculum evaluation

At baseline, except for diseases in which tobacco is a risk factor, a majority of the faculty (56.1 – 100%, depending on the specific topic) indicated that they did not cover any tobacco-related content

Table 2
Faculty member's expectations for baccalaureate and graduate student's tobacco-related skills upon graduation: At baseline and at 2-year follow-up after implementation of faculty and curriculum development strategies.

Tobacco-related skills	Baccalaureate					Graduate				
	Baseline		Follow-up		*p*	Baseline		Follow-up		*p*
	n	%	*n*	%		*n*	%	*n*	%	
3 A's - Ask, Advise, Refer	40	77.5%	42	76.2%	ns	40	70.0%	42	66.7%	ns
5 A's - Ask, Advise, Assess, Assist, Arrange	40	65.0%	42	59.5%	ns	40	97.5%	42	90.5%	ns
Brief motivational interviewing	40	77.5%	42	92.5%	0.049	40	90.0%	42	81.0%	ns
Discuss tobacco dependence treatment medications	40	52.5%	42	66.7%	ns	40	90.0%	42	83.3%	ns
The 5 R's – Explore benefits of quitting	40	80.0%	42	78.6%	ns	40	92.3%	42	83.3%	ns
Develop detailed treatment plan	40	12.5%	42	4.8%	ns	40	80.0%	42	78.6%	ns
Explore past treatment failures	40	40.0%	42	31.0%	ns	40	80.0%	42	83.3%	ns
Explore meds and adjust plan as needed	40	20.0%	42	7.2%	0.088	40	77.5%	42	81.0%	ns

Table 3
Faculty members' level of confidence teaching tobacco-related skills at baseline and at 2-year follow-up.

Teaching tobacco-related skills: (% "Confident" or "Very Confident")	Baseline	Follow-up
Teaching students to recognize tobacco-related health problems	30.8%	46.3%
Teaching students how to discuss tobacco-related issues in the community	29.0%	36.6%
Helping students overcome concerns about providing tobacco dependence education in a healthcare setting	25.7%	31.7%
Teaching students how to encourage their patients to stop using tobacco	25.6%	29.3%
Teaching students how to refer to an effective tobacco dependence program	23.1%	33.3%
Helping students to overcome their own resistance to tobacco dependence treatment activities	15.4%	31.7%
Teaching students how to provide effective tobacco dependence treatment to their patients	5.4%	17.1%

in their courses, and if it was covered, they estimated that it was covered in 15 minutes or less. The topic most frequently taught (53.7%) was diseases related to tobacco use. These findings were confirmed in the curriculum review.

In the follow-up evaluation, there was an increase in didactic hours addressing tobacco dependence in both the baccalaureate (from 1 to 3 h) and graduate nurse practitioner programs (from 0 to 4 h). Additionally, based on a review of course syllabi and one-on-one interviews with course coordinators, there was also an increase in integration of tobacco dependence related content in specialty courses (e.g. Childbearing, Gerontological, and Pediatric nursing). Hours dedicated to tobacco-related clinical skills training increased (from 0 to 4 h) in the undergraduate program with approximately 35% of students participating in a hospital-based tobacco dependence treatment program. The nurse practitioner program increased the clinical skills training (from 0 to 6 h) for 100% of their students.

4. Discussion

The Loma Linda University School of Nursing's experience with faculty development and curriculum redesign in the area of tobacco dependence prevention and treatment is described in this report. An internal survey was conducted to assess the faculty's level of knowledge, perceptions and practices related to teaching tobacco at baseline and two years later after implementation of a range of faculty and curriculum development strategies. At follow-up there was an increase in awareness of: (a) where in the curriculum tobacco dependence content was being taught; (b) what student's tobacco dependence interventions included; and (c) who among the faculty has expertise in tobacco dependence treatment. Additionally, at the time of follow-up there was an increase in didactic hours dedicated to tobacco dependence treatment, an increase in hours dedicated to tobacco dependence clinical skills training, and increased integration of tobacco dependence content in specialty courses. Qualitative findings demonstrated that faculty members experienced an increase in awareness of available treatment options, as well as changes in their attitudes toward patients suffering from tobacco dependence. There was however, no significant increase in the faculty's overall perceived level of confidence in relation to teaching tobacco-related skills.

The survey findings indicate that there is a lack of consensus as to expectations of a baccalaureate prepared nurses in relation to tobacco dependence treatment. In 2009, Sarna et al. reported that tobacco dependence treatment, prevention and engagement in related tobacco control interventions have not traditionally been considered a part of the nursing role even though experts have advocated for some time that it be considered a standard of good nursing care. There is a clear need for concerted effort to increase nurse educators' awareness of the expectations and potential impact of the nursing role in tobacco dependence treatment.

While based only on one school's experience, a number of lessons learned from this project have the potential to inform future faculty and curriculum development initiatives in academic health professional programs. First, it is to be noted that both the formation of a working group with strong institutional support, as well as mentorship from experts in the field was crucial to the successful implementation of this project within the school, obtaining faculty buy-in, and to the identification and empowerment of faculty champions.

Second, focusing *concurrently* on curriculum and faculty development was critical. The administration of an internal survey provided an effective launching point for the faculty and curriculum development strategies. Additionally, providing the faculty with access to continuing education opportunities, as well as online training and educational resources supported the development of faculty members' knowledge base. Likewise, development of specific tobacco-related educational goals for the academic nursing program provided faculty members with a framework from which they could consider how to incorporate this material into their specific content areas. Furthermore, the workshops for faculty included working sessions where faculty members were supported in determining realistic next steps they could take to incorporate this material into their individual courses.

Third, assessing and addressing faculty members' attitudes and beliefs throughout the project, and specifically when implementing curricular change initiatives was instrumental in addressing barriers and overcoming resistance. The barriers to curricular change identified through this process are similar to those that have been outlined by other authors, including lack of time, lack of faculty preparation, an already "obese" nursing curriculum, and lack of clinical sites where tobacco dependence treatment is being provided by nurses (Price et al., 2008b). While assessing advanced practice nursing programs, Heath and Crowell (2007) identified faculty member's beliefs and attitudes toward tobacco control as having the greatest influence on their intention to teach this content. As discussed by Marcus (1997), this may be particularly true when the change is value laden and potentially associated with stigma, which is often the case with any type of substance abuse, and well documented with tobacco use (Simmons et al., 2009; Stuber et al., 2008). Therefore, in spite of valid concerns over burgeoning curricula, there is a need for nursing faculty to proactively address the disparate curricular content dedicated to tobacco within nursing curricula in relation to the burden of disease associated with tobacco use. In fact, we would argue that in light of the massively overwhelming toll of tobacco globally, it is an ethical imperative (Eriksen et al., 2015). However, it is also critical to approach this process in a manner that provides educators with ongoing opportunities to evaluate and potentially challenge their own beliefs and attitudes about tobacco use and treatment (Bialous and Sarna, 2004; Sarna et al., 2012, 2014).

Finally, identifying and supporting faculty champions who were committed to acquiring formal training, as well as a commitment by committee members to having informal 'hallway conversations' with individual colleagues, helped address and explore resistance to this topic, and ultimately enhanced the faculty's capacity in

relation to tobacco control education. Providing ongoing, easily accessible, and interactive continuing education opportunities allowed faculty members to assimilate this material over a period of time. When asked to evaluate the effectiveness of the processes employed in this curricular change project, "persistent communication" was used to describe both what was most and least appreciated about the process. To ensure a lasting and comprehensive integration of tobacco dependence content in nursing curricula a balance needs to be struck between maintaining attention on the related curricular goals and avoiding the creation of issue-fatigue among the faculty. However, in general, it was the perception of the tobacco education committee members that resistance to curricular change in this area was defused by the one-on-one meetings that committee members had with individual faculty members, the commitment to keep the project faculty driven, as well as by the intermittent use of levity in project-related communication.

As a result of these findings, in the next phase of the project we have focused on the development and evaluation of student competency. Critical components have included a commitment to integrate tobacco dependence content throughout the curriculum (versus just being presented in one course), and to ensure that students are provided with ongoing opportunities to hone their related clinical skills. To this end, we have identified the need to collaborate with local tobacco dependence treatment programs to facilitate interdisciplinary observation and clinical learning experiences, as well as the opportunity to support our collaborating clinical agencies with the integration of tobacco dependence treatment into their protocols. Throughout this process we have benefitted greatly from ongoing consultation with the other schools on the Loma Linda University campus (Medicine and Dental) which have already successfully incorporated student competencies related to tobacco dependence treatment into their curricula (Arnett and Baba, 2011; Arnett et al., 2012). Our efforts are ongoing and will be described elsewhere.

While assessing tobacco use by faculty and students was not a goal of this project, it became apparent that some might be in need of treatment for themselves (Chandrakumar and Adams, 2015; Sarna et al., 2010). This is of particular relevance as it is well established that health professionals who smoke are less likely to engage in tobacco related interventions, and on a smoke-free campus such as Loma Linda University, smokers are at risk of experiencing stigma which may represent a barrier to accessing treatment (Stuber and Galea, 2009; Stuber et al., 2008; Tong et al., 2010). Therefore, going forward it will also be critical to identify, acknowledge and address barriers to faculty members' and students' access to on-campus smoking cessation programs and treatment related resources.

Finally, further study is needed to determine effective ways to provide ongoing support to faculty in building expertise and confidence in relation to teaching tobacco dependence related skills. Confidence was modest to low at baseline, and after implementation of the faculty and curriculum development strategies, the overall confidence levels actually became slightly lower. One possible explanation is that this was a result of acquiring an increased awareness of what evidence-based practice in this area entails. It is also noted that while educational opportunities were provided for contract clinical faculty, these faculty members were not included in the survey. It would be important to also evaluate how the same interventions might influence confidence levels among contract or adjunct clinical faculty members.

5. Conclusions

Faculty development and curricular change in the area of tobacco dependence treatment and prevention can be greatly facilitated by: (a) utilizing a nucleus of committed faculty as champions; (b) ongoing engagement with faculty; (c) consultation and mentorship from experts in the field; (d) utilizing multiple curricular review strategies; and (e) use of an internal survey to evaluate change and provide feedback to the faculty. This phase of Loma Linda University School of Nursing's curricular change project resulted in an increase in faculty members' level of awareness of available treatment for tobacco dependence, enhanced empathy for patients suffering from tobacco dependence and changes in the number of didactic and clinical hours in the curriculum dedicated to tobacco control education. It also facilitated progress toward the development of a structure and process model ultimately aimed at ensuring that every nursing graduate is prepared to address the tobacco epidemic by providing evidence-based tobacco dependence interventions with every patient they encounter. This experience provides a roadmap to schools of nursing who are willing to answer the call to engage nurses in addressing tobacco use—the leading cause of preventable death and disease globally.

Conflict of interest statement

The authors have no conflicts of interests to declare.

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