

Innovations in Continuing Education

Multidisciplinary Learning in Continuing Professional Education: The Heart Health Nova Scotia Experience

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Abstract: *Ongoing professional learning is essential for all health professionals. This need is increased as community-based, multidisciplinary approaches to the delivery of health care and to health promotion and disease prevention emerge. A pilot educational program was developed to test a model of multidisciplinary learning in heart health. A multidisciplinary professional education committee jointly developed a case-based educational program to include physicians, nurses, dietitians, pharmacists, social workers, and recreation professionals or health educators. The program was developed in the context of primary health care; specific objectives were developed using a health promotion framework. Problem-based learning was selected as the educational approach, and the cases were developed to incorporate program objectives. Three communities participated. Ten to 12 participants met for 2 hours weekly across 4 weeks to discuss problems concerning individuals at high and low risk for cardiovascular diseases and heart health in their community. The project evaluation involved direct observation, review of documentation, pre- and postprogram questionnaires, and individual interviews. In each site, the project met its goals; however, goal achievement varied across communities. The sessions provided an opportunity to learn about the roles and contributions of other health professionals; they created the basis for future collaboration, and they stimulated extensive discussion about heart health resources in each of the communities involved. We conclude that a multidisciplinary approach to planning and development of such a project is feasible, and that multidisciplinary case-based learning is an effective means of acquiring new understandings and promoting health professionals' collaboration in addressing heart health in their communities.*

Key Words: Canada, cardiovascular disease, community, continuing education, health occupations, health promotion, multidisciplinary, problem-based learning

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A critical element of health promotion and, specifically, heart health promotion is the education of health professionals. These individuals have significant influence at the community level by sharing their respective expertise, providing support and credibility to local initiatives, and assisting in their development.

As health care initiatives increasingly emphasize primary-care models of delivery and community-based health care, health professionals must respond effectively. Improvements in the health of communities will require both effective team work among professionals and the acquisition of skills and understanding related to population and community health. This is especially the case where, as in the province of Nova Scotia, the process of health care reform calls for the delivery of primary care based on interdisciplinary teamwork and cooperation.¹

Heart Health Nova Scotia has been a major 5-year initiative funded by the Canadian federal and provincial governments.² The Professional Education Subcommittee (PEC) of the program was charged with educating health professionals to assist in the reduction of high cardiovascular disease (CVD) risk levels¹ and in the effective promotion of heart health in the Nova Scotian population.

The PEC undertook, jointly, to develop, implement, and evaluate a multidisciplinary continuing professional education (CPE) project. The committee itself was multidisciplinary, including representatives from medicine, nursing, pharmacy, nutrition, recreation, education, and psychology. Review of the literature on CPE in heart health revealed that most initiatives had emphasized predominantly information dissemination, addressed each group of health professionals independently, and had not emphasized active learning or skill acquisition. In short, programs to date had not used principles of adult education³ nor considered how professional behavior might be changed.^{4,5}

The aim of the project was to develop and test multidisciplinary continuing education (CE)

activity in heart health. The project goals were as follows:

- To foster interdisciplinary collaboration among professionals engaged in heart health;
- To increase understanding among professionals of the roles and contributions of various team members;
- To increase knowledge and awareness of existing resources in the community relevant to heart health;
- To enhance participants' understanding of the determinants of health;
- To provide current knowledge regarding CVD risk factors; and
- To enhance participants' skills in assisting individuals and communities to make changes in behavior to promote heart health.

Conceptual framework. The educational intervention was set within a framework of primary health care.⁶ Accordingly, the program was developed to be community rather than hospital based and to emphasize a wide array of determinants of health and both the formal and informal delivery of health care. Within that framework, two conceptual approaches, the PRECEDE framework^{7,8} and problem-based learning (PBL),⁹ were incorporated to guide the development and implementation of the project.

The PRECEDE framework describes three categories of factors that affect individuals' abilities to change behavior in response to education. *Predisposing factors* are those that predispose an individual to act in a certain way. These are generally personal factors and include such areas as knowledge, attitudes, perceptions, and beliefs. *Enabling factors* are those that enable a behavior to occur. Even in the presence of appropriate knowledge and attitudes, behavior may not change in the absence of certain skills or of access to and availability of resources. *Reinforcing factors* are those that determine whether a behavior will continue and include such examples as the patient's

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or client's response and the attitudes of other health professionals. It is through the interaction of these factors that the ability to effect and maintain change is determined.

An educational method that has received much attention in professional education is PBL¹⁰. The implementation of PBL may vary; however, the essential ingredients are that learners acquire knowledge and skills in the context of health problems similar to those that they will encounter throughout their professional careers. Learning is active, learner directed, and offers opportunities for learners of different backgrounds and ability to learn together through the vehicle of a case or problem. Problems can be developed to meet the needs and objectives of different groups, stimulating and building on the varied knowledge and expertise existing in the group. PBL seemed a most suitable means to create a context for learning about heart health promotion.

Methods

Development of specific educational objectives. Based on our review of the literature on heart health and health promotion^{2,11,12} and on the results of an educational needs assessment for health professionals working in heart health in Nova Scotia,¹³ potential objectives were developed in each of the areas of predisposing, enabling, and reinforcing factors. Committee members independently ranked the objectives by importance from their discipline's perspective and corrected any omissions. Following discussion and clarification, the committee accepted the program objectives shown in Table 1.

Case or "problem" development. Four cases were developed from the established objectives. Based on the adult learning principle of relating the learning to the learners' past experience, the cases began with a problem involving an individual at high risk for CVD, followed by an individual with a problem of lower risk. Similarly, the early cases concerned one individual's health problem; discussions of community health

problems occurred later in the program. The four sessions were developed to incorporate all of the stated learning objectives. The sessions included (a) Mr. Smith, a person at high risk for CVD; (b) a counseling session for Mr. Smith to focus on the reduction of risk factors; (c) Mrs. Johnson, a person at lower risk for CVD; and (d) the community in which the project participants lived.

The cases were developed in an iterative fashion, with review and feedback by the committee. Each case was supplemented by guiding questions to stimulate discussion around case objectives. The cases were developed to "unfold" at the rate that the learners chose. The completed cases were pilot tested by the PEC and revised accordingly. In addition to the cases, which were to be the "heart" of the sessions, there were also readings and resources to accompany each session.

Program implementation. Four educational sessions were developed, each 2 hours in length, to occur over 4 consecutive weeks. It was agreed that a multidisciplinary group in each of three communities would include physicians, nurses, pharmacists, recreation professionals, health educators, dietitians, and social workers. To emphasize the community nature of the program, we agreed to hold our meetings in nonhospital settings in each pilot community.

Site and participant selection. Three communities were selected, one urban (population 68,000) and two small towns (population < 10,000). In each community, two individuals in each profession were invited to participate. An introductory visit was made to each community to establish dates, to introduce participants to the project, and to invite their input regarding specific needs and objectives.

Preparation of facilitators. As this was a pilot project and we wished to evaluate its feasibility and potential effectiveness, the committee decided that the same facilitator should lead all 12 sessions. We had originally planned groups of not more than eight participants; however, in each community, there were about 12 interested participants. Also, we believed that some professionals might be more

Table 1 Educational Objectives Identified by the Professional Education Committee

Predisposing Factors

Participants should acquire greater understanding of and explore attitudes and perceptions in the following areas:

1. cardiovascular disease risk factors
2. epidemiologic concepts and data
3. current therapeutic approaches
4. determinants of health
5. available community resources
6. the role of health care team members
7. behavioral change strategies

Enabling Factors

The participants should acquire the following to engage effectively in heart health promotion:

1. skills to promote improved lifestyles
2. behavioral change skills
3. counseling skills
4. skills to implement therapeutic regimes
5. skills to assess individual and community needs
6. effective communication skills
7. skills to implement educational programs

Reinforcing Factors

Participants should:

1. understand the roles and contributions of other health care team members
 2. have opportunities to make contact with other health care team members
 3. understand their own contribution to community heart health promotion
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comfortable contributing if another colleague from their profession was present. Finally, we believed that everyone should have the opportunity to participate in the discussion fully. We therefore trained three PEC members to allow small breakout groups for part of each session if appropriate.

Implementation of the sessions. Each session focused on one "case." Both large and small group work were involved in the first three sessions. Each small group included members from each of the participating professional groups. Time was provided also for discussion and review of resources. At each session, the groups would reconvene at the end of the evening to share and summarize their discussions. The sessions are briefly described below.

1. Mr. Smith. This case was designed to facilitate discussion regarding risk factors, determinants, and approaches to a person at high risk for CVD. The groups discussed Mr. Smith's detailed medical and family history, work and family situation, test results, and current medications. Each group addressed the "guiding questions."
2. Counseling session for Mr. Smith. This session focussed on behavior change counseling for Mr. Smith. Each group discussed strategies for and barriers to behavior change. Relevant resources in each local community were also discussed. Finally, all participants had an opportunity to

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Table 2 Sources of Data in Project Evaluation

Sources	Dartmouth*	Windsor	New Glasgow	PEC [†]
Observation (of the sessions)	x	x	x	
Documentation	x	x	x	x
Questionnaire	x	x	x	
Interview	x	x		

*Dartmouth is the urban pilot site; Windsor and New Glasgow are small towns; [†] Professional Education Subcommittee.

practice behavioral counseling using a summary sheet that outlined specific steps and strategies that they had generated.

3. Mrs. Johnson. This case was designed to focus on an individual with low to moderate elevation of risk factors and to raise the issues of women and heart disease. As with Mr. Smith, local community resources were discussed; the roles of exercise and fitness were addressed in detail in this case.
4. Community health. During this session, participants considered their own community. They addressed the community strengths, areas for improvement, barriers to change, and the responsibilities of various community sectors for the community's health.

Program evaluation. A detailed project evaluation was planned. The evaluation involved methodologic triangulation using interviews, questionnaires, observations, and documentation of the process.^{14,15} Data were collected as shown in Table 2.

Observation. Each session was observed by the project assistant (PW) and the process was documented, noting group dynamics, the facilitator's role, and responses to the cases and to the guiding questions.

Documents. The minutes documenting the process and planning of the project, the cases, the learning tools to support the cases, and the resources provided were examined for their consistency with the objectives of the project. Also,

the flip chart recordings of the groups' work were summarized to review the session content.

Questionnaires. Questionnaires were administered to all participants prior to and at the completion of the four sessions. The preprogram questionnaire identified the present practices of the participants regarding their interdisciplinary interaction and their approaches to heart health issues with their clients. Specifically, respondents indicated how frequently they referred clients to other health professionals regarding heart health, consulted with other professionals about heart health, and discussed heart health with their clients. For each of the above, participants also indicated what they considered to be optimal practice and described some of the barriers that might explain the difference between optimal and actual practice. The postprogram questionnaire addressed participants' perceptions of both the process and the outcomes of the educational sessions.

Interviews. Thirteen interviews were conducted by PW. One urban and one small town were included; costs prohibited interviews at the third site. One member of each discipline was interviewed. An interview guide containing 23 open-ended questions was developed to explore the process of the sessions (13 questions), as well as the perceived effects of the project on the participant's knowledge, attitudes, and behavior regarding multidisciplinary learning in heart health (10 questions). Interview development addressed predisposing, enabling, and reinforcing factors consistent with the specific educational objectives

Table 3 Educational Group Membership at Each Pilot Site

	Dartmouth	Windsor	New Glasgow
Physicians	3	3	3
Nurses	2	2	2
Dietitians	2	2	2
Pharmacists	1	2	2
Social workers	2	-	1
Health educators	2	2	2

developed for the project. The individual, tape-recorded interviews lasted on average 30 to 45 minutes and were conducted at a time and location convenient to the interviewees, usually within 1 week following the final session.

Results

Thirty-five health professionals participated, as indicated in Table 3, including the disciplines of nursing, social work, medicine, pharmacy, nutrition, health education, and recreation. Participants had an average of 14.5 years work experience.

Questionnaires

Thirty-one of 35 participants (89%) completed the preprogram questionnaire. Responses indicated that 67% of respondents believed that they spent an inadequate amount of time discussing heart health issues with their clients; however, the majority of respondents rated their ability in addressing heart health with clients as moderate (38%) or above average (48%). All participants noted that, optimally, heart health issues should become a bigger priority in their professional practice. Fifty-five percent thought that they should refer clients to other health professionals regarding heart health issues more often, 68% said that they should consult with other professionals more frequently, and 74% said that they should spend more time discussing heart health issues with clients. Time constraints, lack of resources, and

long waiting lists were cited as barriers to consulting other professionals and to discussing heart health issues with clients.

The postprogram questionnaire and interview responses addressed overlapping issues. Although only 13 participants were interviewed, 29 of 35 participants (83%) returned the post-test questionnaire; consequently, the interviews served to validate and to add depth to the information provided by the written questionnaires. Because of their similar content, they are reported together, in relation to both the educational process and the project objectives.

I. Process Evaluation

Participants were asked about their own and the facilitators' involvement in the sessions, their response to PBL as a learning method, the length and number of sessions, the resources, and the most and least satisfying aspect of the sessions.

Individual and facilitator participation. Participants unanimously reported that they felt comfortable in the group and were pleased that their respective disciplines were represented. All rated the facilitator as effective. However, some participants felt that the project objectives and expectations of the group were not described clearly, which they thought might be a deterrent to participation.

Problem-based learning. Interviewees unanimously enjoyed the case approach to learning about heart health, even those for whom it was

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a new experience. Some participants suggested that the cases might be more detailed to enhance discussion. Others noted some difficulty adjusting to the process because it differed markedly from the way that they had learned traditionally.

Length and number of sessions. Generally, participants felt that the 2-hour-long sessions were necessary to understand and discuss the cases fully, although the time commitment was significant. A few people also observed that four sessions at weekly intervals were necessary for group members to become comfortable with each other as well as with the process.

Resources. All interviewees reported reading some of the resource articles, and many indicated that they read almost everything. Most said the resources were excellent and would be useful for future reference.

Most and least satisfying aspects of the program. The majority of participants cited the multidisciplinary nature of the project and hearing others' perspectives as the most satisfying aspects of participating. One health professional's comment expressed the views of several: "It was a rare opportunity to meet with other professionals over a common objective — something that is widely promoted and we all basically believe in."

All interviewees were asked the following question: "Is multidisciplinary learning an effective method of changing your approaches to heart health promotion?" Seventy-six percent responded positively. One person remarked further that multidisciplinary learning is a "break in the discipline-specific mode, that it's not only a diet issue, or a smoking issue, or a physical activity issue. It's another good way to remind yourself that all these people in the room represent a potential improvement of risk factors for this disease: you're not the only one." A physician commented that she did not think that multidisciplinary learning would change her approaches and added, "I don't know how effective it is as a learning method, except for the last session [where] I certainly learned a lot that I wouldn't have learned with a group of physicians." The last session addressed community

approaches to health promotion and specifically heart health.

II. Predisposing, Enabling, and Reinforcing Factors

We anticipated that, if multidisciplinary learning is a useful educational approach, this method might also be effective in promoting change in some of the participants' knowledge, attitudes, skills, and behaviors. We examined this by asking the health professionals for their perceptions of whether and how their approach to heart health promotion had changed as a result of their participation.

Predisposing factors: knowledge, attitudes, and perceptions. The majority of participants reported that they did not acquire new knowledge about CVD risk factors as a result of their involvement in the sessions; however, many noted that the sessions caused them to consider CVD risk factors differently than they had done previously.

Participants unanimously perceived that their appreciation of the role of other professionals and their respective approaches to health issues with their clients was enhanced. They also noted a greater awareness of the broad range of determinants of health that affect CVD risk.

Enabling factors: skills. Most respondents stated that they would be more comfortable consulting other health professionals about heart health issues; however, they anticipated some difficulty in changing their rate of referrals to other health professionals as the availability and accessibility of referrals had not changed. The exceptions were referrals to recreation professionals and facilities. All 13 interviewees said that participation in the project had better prepared them to discuss heart health issues with their clients.

Reinforcing factors: behavior. All respondents expressed optimism that increased multidisciplinary collaboration on their part would be supported by other health professionals. They also thought that their clients would welcome more attention to their heart health.

Discussion

The project reported here had six goals, which encompassed fostering interdisciplinary cooperation and understanding, increasing participant awareness of community resources and determinants of health, and enhancing knowledge and skills. This section examines the project implementation and evaluation in light of those goals.

The majority of the participants believed that the sessions had provided an opportunity to learn more about the roles, contributions, and perspectives of other health care team members. For several participants, this was the first structured opportunity to discuss topics of mutual importance with other health professionals. The topic of heart health invites the participation of a broad range of professions, including both institution-based and community-based practitioners. Participants also suggested that future programs include town councillors, policemen, and teachers, particularly during community development discussions.

We would anticipate that increased understanding of the roles of other professionals in heart health, and an appreciation of their contributions toward shared goals, would facilitate interdisciplinary collaboration. In two communities, this was definitely achieved. In the first, an urban site, a family resource centre that had been planned to open in the community became a natural vehicle for future collaboration. A few group members also met to discuss means of supporting each other. In the second community, the group has continued to meet and to work collaboratively to improve community library resources in heart health. All groups requested and received the names and addresses of other participants. In the third community, no clear plans for increased collaboration were made; this could reflect the relatively widespread geographic distribution of the members of that group over three relatively independent smaller communities. It may be premature to judge this outcome, as some future activities may emerge. It is worth noting that, in all sites, participants usually stayed after the meetings to

network and discuss issues. Also, training local facilitators from the community to offer future programs such as this might enhance further collaboration.

In each site, all participants were engaged actively in discussion of the existing community resources. There was also open sharing of information among participants. In addition to those provided by the project, members frequently brought their own resources to share with the group. These were very well received. All group members received a list that detailed the resources identified. In addition to identified community resources (e.g., the local recreation facilities or smoking cessation programs), participants clearly began to view each other as resources. As one physician said regarding the pharmacist in the group, "I'll have to consult [the pharmacist] and put him in my office to answer these questions." The pharmacist replied, "All you have to do is pick up the phone."

We did not measure directly the extent to which an increase in participants' understanding of the multiple, interacting determinants of health was achieved. In all groups, notes recorded revealed that discussion of each case prompted a wide discussion, including social, psychological, behavioral, and environmental factors. Resources were provided that addressed these determinants, and most participants reported reading them. The consideration of a broad range of determinants affecting health was a natural effect of the design of this intervention, which brought together participants with many different perspectives.

Participants' level of knowledge of current issues in heart health was varied within each group, but it was generally high from the outset, probably reflecting the self-selection of persons with interest in this area. Physicians were the most current about diagnosis and management of cardiovascular risk factors; however, their knowledge about the issues in changing lifestyles to lower levels of CVD risk was variable. Nurses, pharmacists, dietitians, social workers, and recreation professionals were knowledgeable in their respective

areas. Because of the varied bodies of knowledge contributed, and the nature and goals of the project, we decided not to test knowledge levels. Many participants stated that they had learned new approaches to heart health issues, and some specific topics provided new information for most (e.g., the issues of women and heart disease).

It is unlikely that an educational program like this one could, independently, effect significant changes in skills. However, we attempted specifically to address behavior change skills, and all participants had the opportunity to practice these skills through role play. Participants also generated, revised, and practiced a "behavior change counseling sequence," which enabled them to consider ways to facilitate behavior change. With regard to achieving change in the community, the opportunity to participate in a brief community development exercise increased awareness and provided a short experience in this area. This session was the most positively received of all four by all groups, and several participants suggested extending it. As skills in the area of community development require development over time and with practice, increased awareness may be a satisfactory outcome of the pilot project.

Beyond these specific goals, our aim had been to test a multidisciplinary educational activity in heart health. The response to the project clearly demonstrates the feasibility of multidisciplinary educational activities. The success of the approach, however, is probably dependent on the educational objectives and health issues concerned, as these activities are probably most effective where many different perspectives must be brought to the solution of a problem and where expertise is complementary but not totally overlapping. The participants commented frequently that they had learned from each other; physicians were the least likely to perceive that they had learned anything, except in the area of community development and health promotion.

The specific learning method we adopted, case or PBL, appeared quite effective in this multidisciplinary group. All participants could

contribute expertise to some aspects of the problem; the group could select the issues on which it wished to focus, and a wide variety of issues were raised. Debate was often lively, and combined good interchange and effective listening. Participants described the method as "practical," "relaxed," and "enjoyable." On the other hand, the relatively unstructured nature of the sessions was not comfortable for all participants, who felt that the approach was "too time consuming for what we accomplished," and that the discussions got "off track." These observations may be true. It is also possible that, with this learning approach, participants must adjust to less directive group leadership and less didactic teaching, which may affect perceptions of what is accomplished. Possibly, some expressed perceptions of the discussion lagging suggest a need to review the guiding questions to ensure that they reflect the way in which experts approach a problem. However, that review should be tempered so that professional participants are not inclined to use their habitual problem-solving approaches, which might reduce discussion and sharing.

All of the 13 professionals interviewed said that they would strongly recommend associates to participate. A pharmacist's brief response was "Do it. You won't regret it."

Recommendations

If this project were to be replicated, the following recommendations are offered for consideration.

1. Consideration should be given to placing greater emphasis on community relative to individual heart health. Several participants suggested such a change in the session content. Certainly, if change at the community level is desired, this would be a logical course. Cases might also be more tailored to the community where sessions are held.
2. In the planning of such a program, a multidisciplinary planning committee is

recommended to decide on objectives and content that are relevant to the community in question and that fairly represent a broad health perspective.

3. As multidisciplinary, problem-based learning may be a new learning approach for most health professionals, care should be taken to discuss with the participants the method apart from the content of the learning sessions. Although case-based learning objectives are not usually provided at the outset, consideration might be given to offering general, broad objectives to participants prior to the first session.
4. Consideration should be given to offering the community development session first. This would have all professionals interact around an issue that is new; it might diminish the tendency to take habitual positions and expected roles.
5. The timing and length of the sessions should be reviewed. Whether four 2-hour sessions are appropriate and feasible might require negotiation with each community.
6. Consideration should be given to training group leaders in the community. To prepare facilitators would be feasible, and it would certainly enhance ownership of the process by the community. The group leader's role is an important one; careful selection and preparation would be important. It may be desirable to have two cofacilitators, one of whom is an educator and the other a member of the local community. It is also possible that, with large group interactive teaching techniques, only one facilitator is needed, irrespective of group size.
7. The project should be replicated involving undergraduate student learners in professional programs. It is at this level that attitudes toward multidisciplinary learning and cooperation are formed.

Implications for continuing education practice and research. Clearly, one educational experience is unlikely to accomplish long-lasting change in behavior. Nevertheless, this type of learning is consistent with current understandings of learning and change. First, providing for learning about community heart health in the community rather than the hospital allows participants to learn in the context in which they will apply the knowledge and skills gained. Second, the participation and, therefore, "practice" of learning in a multidisciplinary group can be applied to other multidisciplinary team settings and to other health problems. Through feedback received from the group, participants may perceive themselves to be more skilled in team approaches to problem solving.

Further study would be useful to define and measure the skills that are acquired in such a setting and to examine how they are demonstrated outside of the particular educational setting.

Conclusion

The project reported here describes an innovative approach to continuing education involving a multidisciplinary group of health professionals. We believe that our experience demonstrates the feasibility of such an educational approach, which could be generalized to a wide variety of health issues and that is grounded in the problems that health professionals encounter in their professional practice.

As health care reform proceeds apace, professional bodies are examining how education of programs at undergraduate (i.e., medical and nursing schools), graduate, and continuing education levels can prepare professionals for the roles that await them in the community.^{16,17} Among those roles, that of the collaborator will be increasingly important to the effective meeting of health care needs. Educational experiences such as these can provide learning opportunities to acquire new skills and knowledge, as well as experience in effective collaboration.

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