

Original Article

Efficacy of a Self-Instruction Package When Compared with a Traditional Continuing Education Offering for Nurses

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Abstract: *Expanding knowledge relevant to health disciplines due to advances in medical science and practice intensifies the needs of health care professionals for continuing education (CE). Traditional methods, such as workshops, do not always result in rapid dissemination of information and/or achievement of low costs. This is especially true for those providers in isolated/rural areas. The key question for this study is: Does a multimedia, self-instruction educational package provide the same or similar learning results as received from a conventional CE conference? Also, which method is the most economically feasible? In both the traditional CE offering and the self-instruction learning package, statistical improvement in scores was observed. Costs for the self-directed approach, while more expensive up front, could prove, depending upon the situation, to be more economical in the long run. These results show that self-instruction learning packages can be viable alternatives to workshops and conferences, saving time and money for the health professional.*

Key Words: Economic feasibility, self-instruction learning package, traditional continuing education (CE)

Innovative methods for disseminating state-of-the-art geriatric information to health profession-

als are needed. Advances in medical science and practice intensify the needs of health care professionals to have access to continuing education (CE) to help them stay abreast of the expanding knowledge base.¹ Legislators, as well as consumers, are pressing for quality and low cost in health care delivery. If these are achieved, the result would be expansion of CE, emphasizing new and more individualized approaches.^{1,2}

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There are basically two types of learning: the traditional didactic model and self-directed. The more traditional methods of dissemination, such as CE conferences and similar mechanisms, often involve passive learning (lecture), with the learner not having to take the initiative to organize his/her learning regimen. In self-directed learning packages, however, the learner has more input into the decision-making process as to the learning that will take place. Self-directed learning embodies a conception of empowerment and personal autonomy not commonly associated with other forms of learning. While no one is advocating totally replacing direct instruction, there is a place for self-directed learning because it can provide comprehensive, flexible, timely, and relevant CE. Self-directed learning enables instructors to become educational brokers and facilitators of learning rather than mere transmitters of it.³

The traditional models of learning do not always result in rapid dissemination of information and/or low cost. Most importantly, certain sectors of the health provider community, notably those in isolated/rural areas, encounter difficulties in finding the time and financial and social support needed to take part in traditional health provider education programs. Conferences, for example, are often held in central locations, requiring rural providers to travel and be away from their communities for extended periods of time. Relative to health professionals working in suburban and urban areas, rural health professionals are isolated and frequently lack adequate professional back-up to permit leaving their communities for the purpose of obtaining CE.⁴ The barriers to participation in traditional education programs, such as university-based conferences, are particularly troublesome for nonphysician rural health care providers, who often lack not only time but also funds to support CE needs. Tightening of the travel budgets of health professionals, along with a shortage of these professionals in most facilities, creates a challenge to providers of outreach education. As Cudney⁴ noted, in addition to staff

shortages and low travel budgets, transportation to CE venues is time consuming and sometimes adversely influenced by weather. While many barriers exist for the rural health provider, urban providers also encounter barriers. For example, downsizing of institutions makes it very difficult for the staff to attend CE events because there is insufficient back-up.

Thus, innovative approaches are needed to meet the CE needs of both rural and urban health care providers—in particular, approaches that directly address, and overcome, these significant barriers to effective delivery of CE.^{4,5} No single method of CE can accommodate all health providers, but a place exists for self-directed learning, which is flexible, timely, and an important component of comprehensive CE.³

Self-directed learning packages have their place in adult education theory.³ In fact, at one level, it can be said that all learning is self-directed in that it is what an individual values and chooses to take from an educational encounter.³ According to Knowles,⁶ there are four assumptions about adult learning: (1) acknowledgment of the role that self-concept plays in learning, (2) previous experience in learning, (3) the adult's readiness to learn, and (4) relation of the adult's orientation to learning. Adults learn best when they find the learning experiences practical and based in reality. Self-directed learning does not mean learning in isolation. It is a skill that requires careful nurturing. Knowles believes that "...every act of teaching should have built into it *some* [emphasis added] provision for helping the learner to become more self-directing...all teacher-directed learning is not necessarily bad...and all student-directed learning is not necessarily good."⁷

In a study to compare the relative effectiveness of lecture and self-instruction methods of instruction in a course on clinical parasitology, Zitzmann⁸ found that the self-instruction method is generally as effective as the lecture method. Wade and Kaminski⁹ also found that independent study methods were effective pathways to success for

study in the surgical sciences. They believed this was due, in part, to residents being actively involved in setting up their own study regimen.

As with any mode of learning, there are advantages and disadvantages.¹⁰ The advantages of self-directed learning packages include (1) they respond to the different pacing needs of the learner, (2) learners know what they need to learn and can be independent in learning, (3) learners can achieve a predetermined level of competence, and (4) learners are usually more satisfied once introduced to the concept. The advantages for instructors are (1) they can provide information that is specific and consistent over time, (2) there is more flexibility in use of their time and more time for other projects and programs, and (3) it is a cost-effective alternative to traditional learning. The disadvantages include (1) learning style differences inherent in learners, (2) learners may miss the interaction and exchange with peers and instructors, and (3) learners may not finish the learning package in a timely fashion because of procrastination. For instructors, the disadvantages include (1) a change in role from provider to facilitator of learning, (2) loss of control, (3) depersonalization, (4) increased up-front development time and costs, and (4) the possibility for dishonest behavior in completion of post-tests.

The Wake Forest University Older Americans Independence Center (OAIC), whose mission is to develop interventions to enhance the lives of older adults, provided a unique opportunity to develop and demonstrate the feasibility of innovative education approaches in the dissemination of new information from clinical research. In addition, the faculty at the Bowman Gray School of Medicine/North Carolina Baptist Hospital Medical Center have developed a CE network, which includes the Northwest Area Health Education Center (AHEC), the Appalachian Geriatric Education Center Consortium (AGECC), and the Dissemination Core of the OAIC. All of these entities work together to develop the highest quality geriatric education for health providers. This network was used to execute our demonstration project.

To determine the topic and format we should use in our demonstration project, we used a survey of health professionals that was conducted by the AGECC in 1990 and again in 1992. The survey was conducted to determine CE needs. Respondents included physicians, pharmacists, nurses, nurse practitioners, dentists, physician assistants, social workers, and health care facility administrators in the states of North Carolina, South Carolina, Georgia, Tennessee, West Virginia, and Virginia. In this survey, respondents were asked questions such as What geriatric topics do you feel you need to learn about? What geographic locations are the most convenient for you to go to for continuing education? What is the maximum cost of workshops you are willing to pay? Do you or your place of work pay for your CE? and What CE format do you prefer (e.g., workshops, self-instruction such as videotape and/or computer)? Of the topics listed, geriatric pharmacology was unanimously requested. The educational methodology most requested was self-instructional videotape learning. Thus, we decided to develop the requested format of self-instructional videotape learning, compare it with the more traditional CE offerings, and use geriatric pharmacology as the subject matter.

According to educational theory, three decisions must be made before an educational program is implemented: (a) the aims of the program (what is the learner to learn), (b) the methods to be used, and (c) the method of evaluation to determine what the learner has learned.¹¹ Decisions for the present study were as follows: (a) the aims of the educational training program were to increase the knowledge base of nurses and nurse practitioners in the area of geriatric pharmacology and to compare two educational methodologies, (b) the methods chosen were the traditional CE conference and a self-instructional learning package, and (c) the evaluation for this phase of the project was a pre-/post-test to determine the knowledge gained and an analysis of costs affiliated with both methods to determine their cost effectiveness.

A study was designed to compare two methods of delivering CE: the traditional conference approach and a self-instructional videotape learning package. The following question directed the study: Does a multimedia, self-instructional education package provide similar learning results achieved by a traditional CE conference? An additional question concerned the cost element: Which method of education is the most economically feasible?

Sample

The sample for the traditional CE model consisted of 35 registered nurses who enrolled in the program, marketed by a brochure. The nurses came from a variety of institutional settings: hospitals, long-term care facilities, and home health agencies. These settings are located within the Northwest AHEC 17-county region, which is in the northwest area of North Carolina. The conference was sponsored by the AGECC and the Northwest AHEC and held in Hickory, North Carolina.

The sample for the self-instruction learning package consisted of 28 nurses (registered nurses and licensed practical nurses) from two AHEC sites in South Carolina (Greenville and Spartanburg). They came from hospitals and long-term care facilities.

Because of the nature of this study, the groups could not be perfectly matched. With a conference, there is no control over who registers to participate. However, in spite of this, the groups were quite similar. Those nurses participating in the conference were, in large part, from the northwestern part of North Carolina, at the foothills of the mountains. Those participating in the self-directed course were from northwest South Carolina, at the foothills of the South Carolina mountains. Their educational backgrounds were similar with both having registered nurses and licensed practical nurses as participants. The nurses from both groups had been in practice for at least 3 to 5 years. An estimate of their average age is 40.

Methods

The traditional CE event was a 5-hour workshop with the pharmacist (featured in the self-instruction learning package) serving as the speaker. The self-paced instructional education package could be completed in approximately 6 to 10 hours, depending upon the individual.

As stated earlier, the topic of the education, geriatric pharmacology, was chosen because of an indicated need by health providers. The content for both the traditional learning experience and the self-instruction package consisted of the following: phenytoin, warfarin, antipsychotics, and polypharmacy.

The traditional conference consisted of a lecture and discussion as its format. The self-instruction package consisted of four videotapes, a workbook with case histories, background readings, and a pharmacologic textbook. Evaluation for both methodologies was undertaken with a 12-item test, all with a single-best answer. The same test was used for the pre- and post-tests. The test was developed specifically for this training with questions matched to the major areas of training. The questions were multiple-choice, single-best answer. Both educational formats were approved for nursing credit.

Development of the Self-Instruction Package

The development of both the workshop and self-directed learning package began with an advisory group consisting of nurse practitioners, registered nurses, a pharmacist, health educators, and an instructional designer, which was formed to work with this project. The geropharmacist gave the content categories to be included in the conference/self-instruction program. We then designed the 1-day workshop. For that workshop, the pharmacist had selected handouts and articles.

For the self-instruction program, we took the workshop outline and began generating ideas as to how to modify it for videotape. We developed

a storyboard, including directions on how to use the package. From our own experiences, we knew that it would be good to have interesting graphics in order to keep the participants' interest. Slides from the workshop and segments of the pharmacist's presentation were put on the videotape. We developed a notebook containing the videotape and the handouts. The notebook has several sections, which are as follows:

- A table of contents;
- An authentic case giving age, condition, and medications currently being taken;
- A section on the nurse's role;
- A Verifile or self-assessment tool;
- Articles/handouts;
- A reference list; and
- Challenge questions, which give a scenario in the case and then ask questions about what the participant would do, including a summary of the nurse's role, a videokey that was a copy of the slides used in the presentation, and the Verifile—a list of self-assessment questions.

After the initial development, the package was piloted in our institution with a variety of nurses. This enabled us to determine the hours of credit to request from the North Carolina Board of Nursing. In order to obtain their credit, we were required to supply them with our objectives, an estimate of the length of time needed to finish the module, and an evaluation component. After the pilot testing, revisions were made to the package.

As stated earlier, there were four parts to this presentation: phenytoin, warfarin, polypharmacy, and neuroleptics. We developed four separate modules and these could be purchased separately. If someone wanted all four, there was a discounted price.

Results

In the traditional CE offering, an observed improvement occurred in mean scores from 61.7 to 77.2, which is statistically significant ($t = 4.86$, $p < .0001$). In the self-instruction learning pack-

Table 1 Results of the Pre-/Post-tests for the Traditional CE and the Self-Instruction Learning Packages

Educational Methodology	Pretest (Means)	Post-test (Means)
Traditional CE	61.7	77.2*
Self-Instruction	63.4	71.8**

* $p < .0001$ ($t = 4.86$, $df = 35$); ** $p < .018$ ($t = -2.54$, $df = 28$).

age group, an observed improvement occurred in mean scores from 63.4 to 71.8. This, too, is statistically significant ($t = -2.54$, $p < .018$) (Table 1).

In comparing the costs of the two methods, the following was discovered: for the traditional CE, the cost was \$45.00 for a 1-day workshop. This included handouts (the same as the articles in the notebooks of the self-instruction learning kits) but did not include lunch or travel. For some of the participants, travel was up to 1-hour one way. For the self-instruction learning package, each module costs \$79.00, which includes a videotape (approximately 20 minutes), a notebook with referenced articles and worksheets, and the shipping/handling costs. There is a discount for those purchasing all four modules. This cost is \$285.00.

Discussion

The comparison of the two CE methodologies suggests that self-paced videotape-based instruction can be a highly acceptable alternative to traditional CE methods (see Table 1). While the scores were slightly higher in the traditional conference group, it is important to bear in mind that these participants took the post-test immediately after the teaching occurred. Those participating in the self-instruction package took the test after they had completed all of the modules, which could differ for each learner. For example, some may have worked on the package over an extended period of time (we allowed them 2 weeks to com-

plete the package and return the test to us), while others may have completed the package immediately. Therefore, testing for some may have occurred several days after completing the first sections and immediately following the completion of the last section. Immediate recall would not be there for the first sections completed. While this may be a disadvantage with regard to test scores, it illustrates an advantage to the learners in that they may pace themselves according to their own needs.

As noted in the Results section, the cost up front for the entire self-directed learning package (four modules) is greater than for the traditional CE offering (\$285 versus \$45). However, for the 1-day workshop, in addition to the \$45.00 registration fee, the facility/workplace may need to bring in someone to cover for the person attending the conference, in addition to paying for a meal and possibly an overnight stay. Also, over the long term, the self-directed package is definitely more economically feasible. The packages can be used by facilities for all of their nurses (if they so desire), eliminating travel and meal costs (i.e., the cost to send six nurses to a 1-day program at \$45.00 is \$270, not including travel, meal costs, and/or overnight stays). The package can also be purchased by libraries, increasing the number of persons who have access to the information and those persons being able to check out the materials as many times as they wish. In other words, for persons who purchase the materials or access them from libraries, there is unlimited access to the knowledge, allowing persons to go over the material for as long and as often as they desire. With traditional CE, once the workshop is completed, the participants do not have access to the speakers, only to their notes and/or handouts. Also, as noted in the Methods section, the development of a self-instruction learning package is very time intensive initially and much less intensive once the product is produced, while the traditional model is time intensive throughout the educational experience. In addition, once the package is developed, the faculty merely have to periodically

update it. This saves on teaching time, which can be used in a variety of ways (e.g., enhance present courses or develop new courses and learning packages).

This project demonstrates that learning from self-instruction learning packages can be effective, with the added benefits of participants being able to complete it at their own pace and convenience. In addition, they can focus on those areas in which they need the most help. The self-instruction approach has the potential to reach those health professionals typically more difficult to reach. Therefore, an effective technology exists with which to deliver education to isolated individuals as well as urban individuals who find it difficult to take time away from busy health delivery settings.

Based on evaluations of the participants, the self-instruction learning packages have been revised and modified. Thus, the instructions are clearer, and the information is better organized. The self-instruction learning package is in four separate modules to enable professionals to choose the topic areas in which they need the most assistance. We are in the process of converting the modules into computer-assisted learning programs.

With the rapidly increasing older population, the constant onslaught of new data, and the inability of many staff to leave their workplace to attend CE workshops, it is imperative for educators to find innovative ways to disseminate geriatric information. Videotape self-instruction is one effective method of accomplishing this task.

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