Determinants of changes in nurses' behaviour after continuing education: a literature review

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Determinants of changes in nurses' behaviour after continuing education: a literature review

Nursing continuing-education programmes may differ in the extent to which they affect nursing practice. Differences may be explained by characteristics of the participants' background, the programme itself, teacher(s), relationship between participants, relationship between participants and teacher(s), physical environment during the programme, participants' social system, knowledge, skills and attitudes, and intention to change. In this literature review, a model is presented which integrates these variables and which may be used to explain why continuing-education programmes have no, little or considerable effect. On the basis of current scientific knowledge, colleagues' and superiors' support emerges as the most important determinant of behavioural changes in nursing practice.

INTRODUCTION

A storm of continuing education is sweeping through the nursing profession. The increase in nursing, medical and technical insights has resulted in nurses' diligently enrolling in continuing-education programmes. In addition, the changes in the structure and culture of the delivery system affect the need for continuing education. A total dependence on the medical profession has shifted to a more autonomous position for registered nurses, which required new knowledge, skills, attitudes and behaviour (Oliver 1984, Archer 1983).

In relation to these developments, the authors are studying the effectiveness of a nursing programme entitled 'Pain

assessment and management in surgical cancer patients' (Francke & Erkens 1994). In the design phase of this study, it was necessary to answer the question: Under what conditions will this programme have the greatest impact? This formed the background of the literature review presented in this paper.

The intention of nursing continuing education, as espoused by the American Nurses' Association (ANA 1986), is to enhance nursing practice and, consequently, to promote the welfare of patients. Alterations in knowledge, skills and attitudes do not automatically mean changes in practice. Therefore, this literature review only focuses on determinants of behavioural changes.

In respect to our programme, we were primarily interested in determinants of behavioural changes subsequent to programmes on pain assessment or management. Unfortunately, only a few of these programmes have been

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described (Camp-Sorrell & O'Sullivan 1991, Myers 1985, Foglesong *et al.* 1983, 1987). For this reason, publications on programmes covering topics not related to pain are also incorporated in this review.

MODEL

A drawback of most studies in continuing education is the lack of a conceptual model. This sometimes makes it difficult to interpret the effects of programmes on nurses' behaviour. Still, we have been able to find some independent variables in the nursing continuing-education literature (e.g. Waddell 1990, 1991, Cervero *et al.* 1986, Cervero 1985) and in the pedagogic literature (e.g. Boekaerts 1991, Peterson 1979) that are related to behavioural changes, namely characteristics of the participants' background, the programme itself, teacher(s), relationship between participants and teacher(s), relationship between participants, physical environment during the programme, and social system of the participant.

We have also distilled some mediating variables from the continuing-education literature (e.g. Kiener & Hentschel 1989, Cervero *et al.* 1986, Cervero 1985) and from sociopsychological publications (Ajzen & Fishbein 1980, Fishbein & Ajzen 1975, Rogers & Shoemaker 1971) that appear to play a determinant role in behavioural changes. These variables are: (a) knowledge, skills and attitudes of participants after the programme, and (b) participants' intention after the programme to change their behaviour. We have integrated these variables in a model (Figure 1) that can be considered an extension and adaption of Cervero's (1985) model.

In the following sections, we will review the aforementioned variables in relation to behavioural changes.

PARTICIPANTS' BACKGROUND CHARACTERISTICS

Baseline scores, age and experience

In Grond & Visser's (1979) and Pool's (1983) Dutch studies on the effects of a communication programme, participants with little nursing experience reported the most behavioural changes. This phenomenon could be explained by the fact that the young, inexperienced participants had

relatively low baseline scores on the outcome variable 'therapeutic behaviour'. Therefore, changes could be realized more by the younger nurses than by their older colleagues (Pool 1983). In addition, the younger nurses were probably less set in established behaviour patterns and thus more inclined to utilize new skills (see also Cox & Baker 1981, Foglesong *et al.* 1987).

However, in her meta-analysis of 34 studies on the effects of nursing continuing-education activities, Waddell (1990, 1991) found no relationship between experience and behavioural changes, nor between age and behavioural changes. Yet it should be mentioned that publications on very different types of programmes were included in Waddell's meta-analysis, which may account for these outcomes.

Education and intelligence

We have found some indications in Rogers & Shoemaker's (1971) study on the relationship between education level and intelligence-related characteristics, and behavioural changes. Rogers & Shoemaker examined 1500 studies on innovations and expanded the concept of innovations to such an extent that continuing-education activities can be included. It appeared that individuals with many years of education, high educational aspirations and high intelligence more readily adopted innovations than individuals lacking these qualities.

Motivation

It can make a difference whether someone enrolls in a programme purely because it is imposed by his or her superiors or policy makers, or because he or she is actually interested. Foglesong *et al.* (1987) did establish that nurses who voluntarily participated in a pain-management programme applied their new pharmacological insights to a greater extent than nurses who were required to take the programme. In contrast, Ruder (1987) found no differences in behavioural changes between nurses voluntarily participating and nurses compelled to participate in a programme on the nursing process. A problem in the interpretation of these outcomes is that whether or not participation is mandatory does not always clearly indicate the extent to which a participant is motivated.

Figure 1
Variables related to behavioural change following continuing education (CE).

Innovativeness and openness to changes

Cervero *et al.* (1986) investigated the effects of a programme for recently hired nurses. They found that nurses who were described by their superiors as innovators applied their new knowledge the most, while laggards applied it the least. The results of Warmuth's (1987) study pointed along the same lines. Six months after the conclusion of a COPD (chronic obstructive pulmonary disease) programme, Warmuth asked which factors influenced nurses to apply what they had learned. Openness to changes was most frequently mentioned as an important factor.

These findings are supported by Rogers & Shoemaker's (1971) study which revealed that individuals with a favourable attitude towards change were earlier adopters of innovations.

Other individual characteristics

Rogers & Shoemaker (1971) also concluded that earlier adopters were often characterized by a favourable attitude towards risk, a high degree of social integration and participation, a nonfatalistic attitude, familiarity with innovations, and having a tendency to seek out information.

After a cancer nursing programme, Donovan *et al.* (1981) asked nurses what kept them from applying what they had learned. Lack of self-confidence and difficulty in taking initiative were stated as the most prominent inhibiting factors.

CHARACTERISTICS OF THE PROGRAMME

Content

In her meta-analysis, Waddell (1990, 1991) made the following divisions in respect to the content of the 34 programmes studied: general nursing practice, specialty nursing practice, advanced nursing practice, chronic disease, medication/pharmacology, and new graduate orientation. Waddell did not find a relationship between the content of the programmes and the effect size of behavioural changes.

Quality

Warmuth (1987) asked nurses who participated in a COPD programme what stimulated them to utilize their new knowledge and skills. The high quality of the programme was stated relatively often. Waddell (1990, 1991) assigned in her meta-analysis a quality rating to each of the 34 continuing-education activities, with respect to: duration of the programme, presence of a needs assessment, specificity of objectives, teaching methods, inclusion of the principles of adult learning, extent to which the ANA definition (ANA 1986) of continuing education was met, use of quali-

fied faculty, and appropriateness of time frames for objectives. Contrary to expectations, there did not appear to be a relationship between the quality ratings and the effect sizes with respect to behavioural changes.

Waddell's own explanation for this outcome was that the publications on which the meta-analysis was based probably did not give a correct description of the activities concerned. Another explanation is that a valid description of quality could not be obtained without taking participants' subjective perception of the quality of a programme into account.

Educational methods

Methods which pay attention to both affective and cognitive learning, for example 'confluent education' (Francke & Erkens 1984), would have a greater impact on behavioural changes than purely cognitive-oriented methods (Alexander 1990). A controlled health education study by Ross Paulk (1985) suggested that methods that focus both on affections and knowledge have a greater effect on behaviour than methods that focus only on knowledge. With respect to nursing continuing education, controlled studies concerning this topic are lacking.

Several authors, for instance Parfitt (1989) and Popiel (1977), pointed to the importance of student-directed methods for nursing (continuing) education. In these methods, students have considerable influence on how, when and what is learned. Unfortunately, there is no known nursing continuing-education study that addresses the question of whether student-directed methods do in fact have a greater impact than teacher-directed methods on behavioural changes.

Educational strategies

In Waddell's meta-analysis (1990, 1991), the influence of more specific educational strategies, like live classroom instruction, lectures and group discussions, was investigated. Waddell could not find any relationship between these educational strategies and the effect size of behavioural changes. When interpreting these findings, it should not be forgotten that in this meta-analysis publications on very different types of programmes were included, which means we must be cautious in drawing conclusions.

Duration

Frequently, it is emphasized that behavioural changes should not be expected when programmes are of short duration (8 hours or less) and when many different topics are discussed (Camp-Sorrell & O'Sullivan 1991, Ferrell 1988, Oliver 1984, Cox & Baker 1981). Still, Waddell's meta-analysis (1990, 1991) did not show a relationship between the length of programmes and the effect size of behavioural

changes. The duration of the programme, however, was not combined in this meta-analysis with the number, nature or complexity of the topics dealt with.

Follow-up

In organizations where there is resistance to the topic and objectives of a programme, a follow-up could be important (Fielding & Llewelyn 1987, Meservy & Monson 1987, Oliver 1984, Heick 1981): the chance of the fading away of what has been learned would be reduced. A follow-up can take various forms, for example, practical supervision (Meservy & Monson 1987), follow-up meetings (Oliver 1984, Heick 1981) or consultations between participants (Fielding & Llewelyn 1987). We only found empirical data on this subject in Wake's (1987) review. Wake analysed 11 nursing continuing-education studies and found that six of the seven effective programmes (programmes with an impact on practice), and none of the four ineffective programmes, had some kind of follow-up.

Target group

It is often suggested that the target group must be homogenous, in terms of professional background and learning objectives and needs (e.g. Ferrell 1988, Pool 1983, Heick 1981). However, it appears from Waddell's meta-analysis (1990, 1991) that programmes exclusively aimed at qualified nurses did not lead to more behavioural changes than those also oriented towards nursing students, nursing aids or other health care workers.

It did appear, however, from Waddell's meta-analysis that when participants came from the same institution more behavioural changes were demonstrated than when participants came from different institutions. An explanation for this finding could be that participants in the former instance may be geared more to the specific needs and problems occurring in their institution. (For other possible explanations, see the sections 'Relationship between participants' and 'Social support'.)

Other characteristics of the programme

Rogers & Shoemaker (1971) described the following five characteristics related to adoption of innovations: relative advantage (the degree to which an innovation is perceived as better than the idea it supersedes); compatibility (the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of the receiver); complexity (the degree to which an innovation is relatively simple to understand and utilize); trialability (the degree to which an innovation may be experimented with on a limited basis); and observability (the degree to which the results of an innovation are visible to others).

What applies to innovations in general will most likely also apply to continuing-education activities. Accordingly, various researchers (Ferrell 1988, Fielding & Llewelyn 1987, Cervero 1985, Cervero & Rottet 1984, Heick 1981, Gox & Baker 1981) indicate that a programme must be related to the needs of nurses and the objectives of the organization (comparable with Rogers & Shoemaker's relative advantage and compatibility). Others (Wake 1987, Keltner 1983, Pool 1983) emphasize the importance of practical applicability (comparable with Rogers & Shoemaker's complexity and trialability). However, 'hard' research data on the influence of such characteristics on nurses' behaviour are lacking.

CHARACTERISTICS OF THE TEACHER(S) AND THEIR RELATIONSHIP WITH PARTICIPANTS

Research by Rogers Eason & Webb Corbett (1991) revealed that nurses prefer warm, enthusiastic, friendly teachers with a great deal of expertise. We have some empirical indications concerning the influence of the teacher's expertise on nurses' behavioural changes. In the programme Pool (1983) studied, teachers (psychologists) were fairly unfamiliar with nursing practice. Pool suggested that the lack of changes in practice was related to the teachers' general approach which fitted poorly with the nurses' direct working experiences.

Characteristics of the relationship between participants

It is known from pedagogical studies that reciprocal sympathy and support, respect and feedback among students contribute to a favourable course of the learning process (Boekaerts 1987). The extent to which participants' interactions affect behavioural changes has not been entirely established. Yet we do have some indications. As already mentioned, Waddell's meta-analysis (1990, 1991) showed that programmes in which participants all came from the same institution were the most effective. This may be an indication that the relationship between participants is an important factor.

Characteristics of the physical environment

According to Quinn (1980), room temperature, regular breaks and the availability of refreshments may help increase motivation during nursing education. Empirical data supporting a relationship between such variables and the extent to which nurses change their behaviour after a programme are still lacking.

CHARACTERISTICS OF THE SOCIAL SYSTEM

Social support

In Pool's (1983) programme, nurse participants experienced disapproval, envy and lack of understanding from colleagues and superiors. This inhibited application of the communication skills learned. A large number of authors report similar findings (Brasler 1993, Suitor Scheller 1993, Waddell 1990, Kiener & Hentschel 1989, Brown *et al.* 1987, Fielding & Llewelyn 1987, Wake 1987, Warmuth 1987, Cervero 1985, Keltner 1983, Donovan *et al.* 1981, Heick 1981, Ajzen & Fishbein 1980, Valencius 1980, Rogers & Shoemaker 1971).

In institutions where nurses are encouraged to apply new knowledge and skills, this seems to have favourable consequences. Peden *et al.* (1990) studied the effects of a continuing-education programme on patient education. Two months after conclusion of the programme, participants themselves, as well as their supervisors, reported positive behavioural changes. The researchers linked this to the fact that participants felt encouraged by others in the organization. Cox & Baker (1981) also established that nurses who received compliments and support from their superiors frequently and increasingly applied the new communication and diagnostic skills. In Meservy & Monson's (1987) study it was found that physicians' support as well may have a large impact on the utilization of new skills.

As mentioned before, Waddell (1990, 1991) found that programmes that drew participants from a single institution resulted in more behavioural changes than programmes that drew participants from various institutions. One possible explanation for this difference could be that, after the single-institution programmes, participants will receive relatively more support and reinforcement from colleagues than after the multiple-institution programmes.

Climate and setting

Utilization of new knowledge and skills may be directly related to the climate of the institution in general, and the climate of the work unit in particular (Suitor Scheller 1993). The value structure, informal and formal goal structures, norms, roles, hierarchies, sanctions and rewards of an organization can interfere with the transfer of knowledge to the work setting (Suitor Scheller 1993, Cervero 1985, Rogers & Shoemaker 1971). Yet no experimental studies have been conducted that provide a strong basis for these statements.

Some authors, e.g. Foglesong *et al.* (1987), have suggested that the climate in academic hospitals is characterized by more openness to education and changes in practice than that in nonacademic hospitals. In Waddell's

meta-analysis (1990, 1991), however, no relationship was found between working in a certain type of clinic or setting and behavioural changes.

Practical conditions and support

The nurses in the studies by Suitor Scheller (1993), Kiener & Hentschel (1989), Pool (1983) and Donovan *et al.* (1981) cited lack of time and personnel as significant reasons for not applying new knowledge and skills. To what extent these factors were actual reasons, and not rationalizations, has not been examined yet. However, Cox & Baker (1981) suggested that practical conditions have to be created to facilitate learning and use of new knowledge and skills. For example, the deployment of extra nursing personnel during and shortly after a programme would sometimes be necessary to give participants the opportunity to put learning into practice.

Area

Waddell (1990, 1991) divided the various areas of practice into general medical/surgical, maternal/child health, psychiatric/mental health, critical care, and gerontology. There was no significant difference in effect sizes in behavioural change across these areas of practice.

Nursing system

According to Foglesong *et al.* (1987) and Pool (1983), task-oriented nursing systems may inhibit, while patient-oriented systems may facilitate, the utilization of certain skills. Here, too, controlled studies are lacking.

KNOWLEDGE, SKILLS AND ATTITUDES AFTER THE PROGRAMME

Knowledge, skills and attitudes are immediate determinants of nurses' behavioural changes (Warmuth 1987). Kiener & Hentschel (1989) asked 443 nurses, who had participated in programmes focused on writing skills or on nursing theories, to list factors that inhibit or facilitate behavioural changes. Newly acquired knowledge was most often mentioned as a facilitating factor.

Concerning the relationship between skills and behavioural changes, empirical data can be derived from Brown *et al.* (1987). In this study about a programme in physical assessment, the most frequently cited reason for lack of behavioural changes was that nurses did not feel competent enough with their skills.

With respect to the relationship between attitudes and behavioural changes, information is given in the sociopsychological literature on 'reasoned action' (Ajzen 1988, Ajzen & Fishbein 1980, Fishbein & Ajzen 1975). Whether someone has a positive, neutral or negative attitude

towards a certain topic, as well as towards the behaviour that is associated with that topic, appears to be very determinative of actual behaviour.

Intention to change after the programme

According to the 'reasoned action' theory (Ajzen 1988, Ajzen & Fishbein 1980, Fishbein & Ajzen 1975), another determinant variable can be distinguished: the intention to demonstrate a certain behaviour. The fact that this variable is indeed closely related to actual behaviour has been established, for example, by Cervero *et al.* (1986), Pritchert (1984) and Rogers & Shoemaker (1971).

RECOMMENDATIONS FOR RESEARCH

We can conclude that we do not yet possess a complete picture of the influence of many variables. For example, more insight must be gained in the extent to which motivation prior to a programme affects behavioural changes. This is an interesting subject because it offers many practical implications: the question can be answered whether it makes sense to offer a continuing-education programme if participants seem to have little motivation or interest. At this time, with the many discussions about the value of mandatory continuing education, this is a relevant theme.

In addition, it would be worthwhile to focus in future research on the influence of different teaching methods. For example, is there a difference in effectiveness between student-directed versus teacher-directed teaching methods? Are teaching methods that stimulate the sharing of personal experiences, attitudes and feelings more effective than purely cognitive-oriented methods? Answers to such questions could also contribute to the development of theory and practice of nursing continuing-education activities.

Furthermore, it is a challenge to do research on the influence of characteristics of the teacher(s), the participant-teacher relationship and the relationship between participants. For example, the question can be answered whether it is important to experience good contact with the teacher and fellow participants with regards to behavioural changes (and not only with regards to general, human reasons)?

CONCLUSION

Continuing-education research in nursing is still in its infancy and, consequently, there are still many questions left unanswered. Still, we already have indications for the influence of at least some variables. Particularly, there are considerable data on the influence of colleagues' and superiors' support (e.g. Cervero 1985, Cox & Baker 1981, Rogers & Shoemaker 1971). Therefore, it seems important to involve several hierarchical levels in the planning

and implementation of a continuing-education activity (Waddell 1990), so that participants will have as broad a support base as possible.

In our programme (Francke & Erkens 1994), for example, we tried to involve the nursing directors as well as the ward nurses in negotiations about the planning of the programme. Furthermore, it appears to be important that colleagues participate together in a course (Waddell 1990, 1991). For this reason, it was decided to implement our programme in nursing teams, including the head nurse, from the same ward. This would probably facilitate mutual support and reinforcement.

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