Descriptive study to compare patient recall of information: Nurse-taught versus video supplement

By Debra A. Bakker, Diane Blais, Elaine Reed, Claire Vaillancourt, Sandra Gervais and Patricia Beaulieu

Abstract
An important goal in oncology nursing is to provide outpatients receiving chemotherapy with adequate information about their treatment so they will be able to cope with treatment reactions and make appropriate decisions about seeking early medical attention when potentially serious side-effects occur. The purpose of the present study was to evaluate patient teaching strategies at one cancer centre. A comparative descriptive study design was employed. A group of patients receiving one-to-one nurse/patient teaching was compared to a group of patients receiving one-to-one nurse/patient teaching plus a take-home instructional chemotherapy video. The patient groups were compared with respect to: a) level of recall of chemotherapy information; b) the sources of information used; and c) preferred information sources. When the mean scores achieved on the chemotherapy knowledge questionnaire were compared, no statistically significant differences were found between the two groups. In fact, both groups showed a “high” level of information recall. Both patient groups reported using a variety of information sources to learn about their chemotherapy, however, for both groups the preferred sources of information were their direct health care providers. The results of the study raise interesting issues about the feasibility of developing “high-tech” patient education strategies.

Introduction
Teaching patients about chemotherapy and its potential side-effects is an important oncology nursing care issue. The literature shows that the majority of patients want to learn as much as possible about their cancer, its treatments and how to manage side-effects (Laurer, Murphy, & Powers, 1982; Eardley, 1986; Witt, 1987; Brandt, 1991; Hinds, Streeter & Mood, 1995). Research shows that informed patients are more likely to adhere to their treatment regimens and display more self-care behaviours (Dodd & Mood, 1981; Dodd, 1984, 1988; Mood & Bickes, 1992). In addition, information is thought to play an important part in patients’ abilities to cope with their disease by increasing patients’ confidence levels and decreasing their stress and anxiety (Cassileth, Zufkis, Sutton-Smith & March, 1980; Dodd, 1988; Johnson, Nail, & Lauver, 1988; Hinds, Streeter & Mood, 1995; Poroch, 1995).

Patient education is especially critical when patients receive chemotherapy as outpatients and are expected to assume responsibility for monitoring and reporting their reactions to treatment. Therefore, an important goal in oncology nursing is to provide outpatients receiving chemotherapy with adequate information about cancer and their therapy so they will be able to...
cope with treatment reactions and make appropriate decisions about seeking early medical attention when potentially serious side-effects occur.

Patient teaching strategies

“Patient education is a complicated process of needs assessment, timing, information-giving, reinforcement and evaluation.” (Nielsen & Sheppard, 1988, pg 4). Finding the best method to teach patients is an ongoing challenge for oncology nurses. There are many strategies used by nursing staff to communicate cancer information to patients (Doak, Doak, & Meade, 1996; Meade, 1996). The traditional method for patient teaching has been nurse-to-patient dialogue. Other strategies currently used to teach patients include providing them with audiotapes, videotapes or written materials in the form of hand-outs and pamphlets. These verbal, written or audiovisual teaching strategies all have advantages and disadvantages. For example, the one-to-one dialogue between patient and nurse allows the provision of personalized information. It provides the opportunity for questions and answers and can serve to establish rapport and build a trusting relationship between patient and health care provider. However, this format of patient teaching is often considered time-consuming and labour intensive, especially in busy clinical settings (Hinds et al., 1995). On the other hand, the use of written materials and audiovisual techniques allows patients to learn and review information at their own pace and in their own homes. These latter methods make use of both visual and auditory cues to enhance learning. A disadvantage of these methods includes their production costs. As well, audiovisual and written patient education materials are designed and developed, for the most part, by health care professionals. Thus their content reflects health care professionals’ beliefs about what patients want or need to know.

Over the past years, written and audiovisual techniques have been used as supplements to the traditional nurse/patient face-to-face teaching as a way to enhance patients’ knowledge of their condition. Increasingly, these methods are now being used as creative and economical alternatives to the one-to-one nurse/patient interactions as a means of fulfilling an institution’s patient education mandate.

Evaluation of patient teaching strategies

Patient education is recognized both as a responsibility of health professional groups and as an important component in providing quality patient care. The need to evaluate how patients receive information has received increased emphasis. In response, several studies have been conducted to evaluate patient education methods used in cancer care (Cassileth, Heiberger, March & Sutton-Smith, 1982; Israel & Mood, 1982; Dodd, 1984, 1988; Huchcroft, Snodgrass, Troyan & Wares, 1984; Foltz & Sullivan, 1996; Vetto, Dubois & Vetto, 1996), as well as for other diseases and health conditions including post-operative pain relief, (Hawkins & Price, 1993), obtaining informed consent (Norris & Phillips, 1990), diabetic education (Howard, Barnett, Chon & Wolf, 1986; Brown, 1992) and cystic fibrosis carrier screening (Boulton, Cummings, Mayall, Watson & Williamson, 1996).

In particular, the literature contains numerous reports describing the wide use of video as an education format in health care settings. A number of studies indicate that video education is cost and time effective (Gagliano, 1988); is satisfying to the patient (Stone, Holden, Knapic & Ansell, 1989) and increases patients’ short-term knowledge gain (Nielsen & Sheppard, 1988; Stone et al., 1989). Furthermore, some authors have concluded that patient teaching by video is as effective as other instructional methods including personal instruction from nurses and doctors and more effective than printed materials alone (Gagliano, 1988; Nielsen & Sheppard, 1988).

While the nursing literature is rich in articles describing patient teaching methods and the importance of information provision (Griffiths & Leek, 1995), little information is available on evaluating patients’ chemotherapy knowledge following patient teaching sessions as part of oncology nursing practice. The few studies in existence were those conducted in the early 1980s by Dodd and colleagues (Dodd & Mood, 1981; Dodd, 1984, 1988). Dodd conducted a series of studies determining how much information was retained by adult oncology patients following the informed consent procedure. The results of initial studies indicated that adult oncology patients receiving chemotherapy recalled little of the information given to them in the course of obtaining their consent to treatment. They were typically unable to recognize the names of the drugs they were receiving or the potential side-effects that had been identified for them. In later studies in which some patients received a subsequent information visit by a nurse, Dodd found that patients visited by nurses recalled significantly more information about their drugs and possible side-effects than did patients who had no follow-up instructional visit. Dodd concluded that the findings supported the importance of reviewing information with chemotherapy patients as a means to increase recall of information and ultimately knowledge of their treatment.

Based on the reported popularity of videos as an educational tool, the chemotherapy staff at our centre was prompted to produce a teaching video. The instructional video was developed to be used by patients on their own time as a review or supplement to information provided in the standard chemotherapy teaching sessions given by nurses at the centre.

Research question

The aim of the present study was to evaluate patient teaching strategies used by nurses at our centre to prepare patients for chemotherapy treatment. The purpose was to compare a group of cancer patients that received one-to-one nurse/patient teaching to a group of patients that received the one-to-one nurse/patient teaching plus a take-home instructional video. The patient groups were compared with respect to the following outcomes: a) patients’ recall of chemotherapy information; b) sources of information used by patients and c) patients’ preferred information sources.

Methods

Sample

Over a period of three months, outpatients beginning a regimen of chemotherapy treatment at the regional cancer centre were recruited for the study. Eligibility criteria included: known diagnosis of cancer; 18 years of age or older; no previous chemotherapy treatment; and able to read and write English. In total, 61 patients participated in the study.

Procedure

At the clinic, prior to receiving their first treatment, all subjects (n=61) participated in a one-to-one nurse/patient teaching session. At the end of the first chemotherapy treatment before leaving the clinic, the booking clerk randomized each subject into one of two study groups. Randomization was performed by a non-nursing staff member and after each subject had received teaching with a nurse. These measures were used as a means to control bias in patient teaching on the part of the nursing staff.

Subjects in Group I (n=30) participated only in the nurse/patient teaching session. This format included a face-to-face teaching session with one of five chemotherapy nurses who followed a standardized teaching plan. Subjects in Group II (n=31) also participated in a nurse/patient teaching session, but in addition, received a chemotherapy video to take home and view. The video reiterated information in the teaching plan and included the definition, purpose
and possible side-effects of chemotherapy, as well as, information about symptom management. Prior to the present study, the video was previewed by 14 chemotherapy patients who all rated the video as excellent or very good on the characteristics of clarity and usefulness. At their second visit to the chemotherapy clinic for treatment, each of the 61 subjects completed a self-report questionnaire. The questionnaire assessed patients’ recall of chemotherapy information, their preferred sources of information and the sources of information used by them. For all subjects, the time between their first and second visit to the clinic ranged between three and four weeks.

**Data collection tool**

To compare the effectiveness of different patient teaching strategies used at the cancer centre, a measurement tool was required to assess patients’ information recall. No pre-validated questionnaires to measure patients’ general knowledge of chemotherapy or recall of information were found in the literature. The tool used by Dodd (1984, 1988) to assess patients’ information recall during the process of obtaining informed consent was not compatible with the purposes of the present study. Therefore, the investigators developed a four-part questionnaire.

Section I of the questionnaire comprised 23 items to assess subjects’ recall of chemotherapy information. The items addressed the knowledge domain of chemotherapy, were developed from the literature and reflected the subject content presented by chemotherapy nurses in the instructional sessions. Items were written as statements and required a yes/no response. The statements covered basic principles of chemotherapy, potential treatment side-effects, and symptom management related to patient self-assessment and decision making about seeking further medical attention during the course of their treatment. Examples of some of the statements were: “chemotherapy can cure or control cancer”; “chemotherapy only works on cancer cells”; “everyone on chemotherapy has the same side-effects”; and “when having chemotherapy a person should notify their nurse if they have a fever”. Prior to study implementation, the items were reviewed by four oncology nurses and 10 oncology patients for face validity with respect to patient information needs. The group of patients also pretested the questionnaire for clarity and ease of completion.

Section II of the questionnaire collected information about what information sources subjects used and preferred. From a list of 12 sources, subjects were asked to: a) indicate the sources they had used to gain chemotherapy information; and b) indicate in rank order their top three preferred sources of chemotherapy information. Examples of information sources included: talking with chemotherapy nurse; talking with my friends; chemotherapy videos; and television programs. Subjects also were given an opportunity to indicate any other sources they had used that were not included on the list.

Section III collected demographic information about the subjects including age, gender, employment status, cultural background, education level, and diagnosis. Two additional questions were included which asked subjects to self-assess their pre-treatment levels of anxiety and knowledge about chemotherapy. It was not feasible within the context of individual patient and clinic schedules to pretest all subjects before their initial treatment for the two variables of anxiety and chemotherapy knowledge. Therefore, the self-assessment questions were included as a means to grossly estimate these potential mediating factors and to determine whether the two study groups differed with respect to these factors. Subjects rated their pre-treatment level of anxiety using the following four-point scale: not at all; a little bit; moderate; and extreme. Subjects rated their pre-treatment level of chemotherapy knowledge according to the following four-point scale: nothing at all; a little; a fair bit; and a lot.

Section IV instructed subjects in Group II (video) to indicate how often they had watched the videotape and with whom. At the end of the questionnaire, subjects in Group I who had not received the video were informed of its availability and instructed about how to access the video for viewing.

**Results**

**Sample characteristics**

Table One shows the sample characteristics of the two study groups. When the demographic characteristics of age, education level and cultural background were
compared using chi square, no statistical significant differences were found between the two groups. Subjects in both groups received chemotherapy treatment for a variety of cancer sites.

With respect to self-assessed levels of pre-treatment anxiety and chemotherapy knowledge, the two groups were compared using chi square. No statistical significant differences were found between the two groups. The majority of subjects in both groups assessed their level of pre-treatment knowledge of chemotherapy as being nothing at all to a little bit. In terms of anxiety, the majority of subjects in both groups indicated they felt moderate to extreme levels of anxiety prior to their first chemotherapy treatment.

Patients’ recall of chemotherapy information

Table Two illustrates how the two groups scored on the questionnaire section that assessed information recall. Each subject’s score was reported as a percentage of correct responses. Questions left unanswered were scored as zero. The scores for all 30 subjects of Group I were included in calculating that group’s mean score. In Group II, the scores for three of the 31 subjects were excluded from the mean score estimation. The reason for exclusion was that in the video utilization section of the questionnaire these subjects reported that they had not viewed the take-home video. In each case, the group’s mean number of correct responses was at least 80%. When the mean scores of the two groups were compared using a t-test for independent samples, no statistically significant difference was found.

Information sources used by patients

To determine the most frequent sources of chemotherapy information used by each group, a rank-ordered list of information sources was compiled by summing the number of times an item was selected (Table Three). Only two subjects in the video group indicated they had used additional sources not included on the list. These other sources included attending a meeting and a support group. Subjects in each group indicated they used several information sources. In terms of rank order, for both study groups, the same sources appear in the top four positions. However, the rank order differed between groups.

Patients’ preferred information sources

To determine subjects’ preferred sources of information, a rank list of best sources was compiled for each group (Table Four). The rank order of each source was calculated by adding the total points assigned to it based on subjects’ ranking of their first, second or third preferred sources. Reversed scoring was used to assign points to each source, i.e., the first choice was given three points; second choice was given two points; and the third choice was given one point. The top five preferred sources of information were identical for each group. Further analysis to test the effect of demographic factors such as age and education level on preferred sources of information did not reveal any statistically significant differences within the study sample.

Video utilization

Information collected about video utilization from subjects of Group II indicated that three of the 31 (10%) subjects had not viewed the video at home. Seven subjects (23%) reported that they watched the video more than once and 21 (67%) subjects viewed the video once. In response to the question about who viewed the video, nine of 28 (32%) subjects reported that they had watched the video alone and 22 of 28 (79%) reported that they had viewed the video with family or friends.

| Table Two: Mean scores for recall of chemotherapy information |
|------------------|------------------|------------------|
| Group I - No video (n=30) | 80.0 | 47.8 - 100.0 | 12.2 |
| Group II - Video (n=28) | 84.3 | 30.4 - 100.0 | 14.0 |
| t-test (p=0.21) |

| Table Three: Patients’ most frequent sources of chemotherapy information used |
|------------------|------------------|------------------|
| Group I – No Video (n=30) | Frequency | Group II – Video (n=31) | Frequency |
| Talking with chemo nurse | 30 | Pamphlets from centre | 30 |
| Pamphlets from centre | 29 | Talking with chemo nurse | 29 |
| Talking with primary nurse | 27 | Talking with doctor | 27 |
| Talking with doctor | 22 | Talking with primary nurse | 26 |
| Talking with family | 16 | Chemotherapy video | 24 |
| Talking with cancer patients | 16 | Talking with cancer patients | 21 |
| Talking with friends | 15 | Talking with family | 17 |
| Talking with family doctor | 14 | Talking with friends | 16 |
| Books from library | 11 | Cancer Information Services | 14 |
| TV | 10 | Books from library | 13 |
| Cancer Information Services | 10 | TV | 12 |
| Chemotherapy video | 5 | Other | 0 |
| Other | 2 | |

| Frequency = number of times an item was selected as a used information source. |

| Table Four: Patients’ perceived best sources of information |
|------------------|------------------|------------------|
| Group I – No Video (n=30) | Score | Group II – Video (n=31) | Score |
| Talking with doctor | 34 | Talking with doctor | 45 |
| Talking with chemo nurse | 32 | Talking with chemo nurse | 39 |
| Pamphlets from centre | 22 | Pamphlets from centre | 28 |
| Talking with primary nurse | 21 | Talking with primary nurse | 19 |
| Talking with family doctor | 10 | Talking with family doctor | 9 |
| Books from library | 5 | Talking with cancer patients | 8 |
| Talking with cancer patients | 4 | Books from library | 4 |
| Talking with friends | 4 | Chemotherapy video | 2 |
| Cancer Information Services | 1 | TV | 1 |
| TV | 0 | Cancer Information Services | 1 |
| Chemotherapy video | 0 | Talking with family | 0 |
| Other | 0 | Talking with friends | 0 |
| Other | 0 | Other | 0 |
**Discussion**

It is well-documented in the literature that patients frequently forget medical information given to them or do not understand their prescribed treatment (Doak & Doak, 1980; Tuckett, Boulton & Olson, 1985; Ley, 1988; Silverman, Kurtz & Draper, 1998). As well, oncology nurses who spend a large portion of their time in direct contact with cancer patients report that patients often repetitively ask questions about information that has been previously provided to them. For individuals receiving chemotherapy as outpatients, a lack of knowledge or poor understanding of their treatment can have serious consequences that affect the quality of their lives. Therefore, finding effective methods to teach patients about their cancer and its treatment is an important part of providing quality care and is a challenge faced by all oncology care settings.

In the present study, both groups of patients recalled accurately at least 80% of the information presented in the questionnaire. Previous studies which examined patients’ general recall of medical information reported that patients recalled only 50-60% of information given to them during medical consultations (Ley, 1988; Silverman et al. 1998). However, results of other studies focusing on the kinds of information that were being recalled showed that 90% of patients were able to recall key facts that were provided to them about their medical condition (Tuckett et al., 1985). The present findings suggest that oncology patients are able to recall accurately a large proportion of key facts presented to them about their treatment and its management, three to four weeks following participation in formalized patient teaching strategies.

However, these results must be interpreted with caution with respect to identifying factors that contributed to the “high” level of information recall for both study groups. Although the two groups were presented with differing patient teaching strategies within the formal cancer care system, the specific contribution of each strategy to a group’s level of information recall cannot be discerned from the study results. For example, even though subjects in both groups received the same one-to-one instructional session with a chemotherapy nurse, it cannot be assumed that this strategy was the main factor responsible for the “high” level of information recall achieved by the two groups or that the “take-home” video had little influence. It would be interesting to replicate the study to determine whether the recall of information changes over time with groups participating in the two different patient teaching strategies.

In the present study, although subjects indicated the use of a variety of information sources, the preferred sources for both study groups were their direct health care providers, the patient’s doctor and nurse. Table Four indicates that four out of the top five preferred sources included health care professionals. Written material in the form of pamphlets from the centre was the only non-personal information source that received a high scoring in both groups. The “take-home” video did not receive a high score in the rankings of perceived best sources of information. The preference for patient-clinician dialogue has been reported by others (Griffiths & Leek, 1995; Vetto et al., 1996).

Data collected about the use of the chemotherapy video as an information source revealed some interesting and somewhat conflicting findings. First, five subjects of Group I (no video) indicated using a chemotherapy video as an information source (Table Three). Although these subjects did not receive the “take-home” video produced by the cancer centre, their responses may reflect the growing number of cancer education videos available in the public domain or through supportive care services. Secondly, for the group of 31 subjects who received the “take-home” video, not all reported that they had used it as an information source. In fact, seven of the 31 subjects did not even identify from the questionnaire list the video as one of the information sources they had used (Table Three). In addition, when this group was asked in another section of the questionnaire to report on their utilization of the video at home, three subjects reported they had not viewed the video at all.

**Study limitations**

There are a number of issues that must be raised with respect to the study design and the interpretation of the findings. First, limited psychometric testing of the research tool to measure information recall must be acknowledged. Prior to its use, the tool had undergone review only for face validity by chemotherapy nurses and patients with respect to how the items met the study objectives and represented the content presented in the patient teaching session. In terms of the sensitivity of the measurement tool, the response scale may need modification. The dichotomous “yes/no” response scale may have limited the tool’s ability to discriminate levels of information recall. Further testing of the questionnaire with a larger patient population and control group is needed to increase the validity and reliability of the questionnaire as a measurement tool for chemotherapy information recall.

Another issue concerns the nature of conducting studies in a busy clinical setting with patients. In the present study, a post-test-only design was employed to measure information recall. Although the researchers recognized that subjects’ pre-treatment knowledge and anxiety about chemotherapy may influence the process of patient education, circumstances related to patients’ travel and appointment schedules precluded the opportunity to test these potential confounding factors for all subjects prior to their initial chemotherapy treatment. As well, the act of formally “testing” patients at the clinic for their level of knowledge and anxiety about medical treatment prior to its initial administration may present a threatening rather than a safe and comfortable care setting. Therefore, pre-treatment levels of chemotherapy knowledge and anxiety could only be grossly estimated for all subjects by a self-assessment that occurred at some time after the education intervention. Data from this self-assessment were not used to distinguish patients’ levels of pre-treatment anxiety or knowledge but only to estimate whether the two groups were different according to these two factors.

Another important issue to be raised when interpreting these results is the time period between presentation of the patient teaching strategies at the initial chemotherapy visit and assessment of patients’ recall of information. It is likely that during this period of three to four weeks subjects from both study groups sought other sources of chemotherapy information that could contribute to their knowledge of chemotherapy and hence information recall. Information presented in Table Three confirms that subjects in both groups did participate in information-seeking behaviours. In fact, subjects in both groups reported using several information sources. Similar information-seeking patterns of cancer patients have been reported elsewhere (Hopkins, 1986).

**Conclusions**

With the move to meet patient education objectives using technology, the need for evaluation increases. However, these evaluations should not be limited only to examining how these strategies contribute to a patient’s knowledge gain or information recall. Other questions to be raised include the utilization and acceptability of these education strategies to patients. Seeking input from patients about information sources they have used, how they have used them, and which ones they prefer is important.

Although the present study did not provide information to determine the specific contribution of individual information sources to each group’s level of information recall, the results nevertheless provide useful information. The findings suggest that patients can recall key facts of information provided to them about their treatment. The findings also emphasize that oncology patients actively seek information both within and outside the formal cancer care system,
but prefer their care providers as their most important sources of information. Thus, these results support an important and direct role for the oncology nurse in patient education.

The results also raise important questions about the feasibility of developing “high-tech” patient education strategies. Although the study did not provide evidence on how recall of information was influenced by viewing the chemotherapy instruction video, the results did provide some insight on how patients perceived the video as an educational tool. The video was not found to be a preferred information source by those who received it. Furthermore, some of these individuals did not identify it as an information source they had used for themselves. The majority of individuals reported sharing and viewing the video with their significant others. From the health care professional perspective, the initial and main purpose for producing a video was to provide the patient with an educational tool to supplement their own personal learning. It may be that the value of these kinds of “high-tech” educational tools lies more in their use by patients to provide credible information to their friends and family about their disease and treatment.

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