An Educational Intervention as Decision Support for Menopausal Women

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Abstract: The purpose of this study was to develop and test a decision support intervention (DSI) to assist women to make and act on informed decisions that are consistent with their values in the area of menopause and hormone replacement therapy (HRT). Mode and intensity of intervention were tested in midlife women (N = 248), randomly assigned to one of three intervention formats: written information only, guided discussion, or personalized decision exercise. Data were collected over 12 months. Knowledge, decisional conflict, satisfaction with health care provider, and self-efficacy improved following intervention and were maintained for 12 months for all groups. Women's adherence to their own plans over 12 months was 59% (exercise), 76% (calcium intake), and 89% (HRT). Carefully written information is effective in promoting knowledge, adherence, and satisfaction among well-educated, interested women. It was concluded that women can understand complex information, including tradeoffs regarding treatment options. Women will adhere to their own plans, suggesting that consumer rather than provider plans may be the more appropriate gold standard for measuring adherence. © 1997 John Wiley & Sons, Inc.


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Consumer decision making is increasingly recognized as an important aspect of health care delivery. As the prevalence of chronic health problems requiring long-term management rises, health care consumers are demanding to be better informed about their health, to learn strategies to reduce risk and maintain health, and to understand treatment choices for health care problems. Technological advances and new knowledge have resulted in multiple therapeutic options for many conditions, creating complex decision making for patients and providers. Providers are...
increasingly aware of the importance of patient participation in the decision-making process to enhance patient adherence to the prescribed therapeutic regimen. Strategies are needed to assist consumers to make decisions that are informed, consistent with their personal values, and behaviorally implemented.

In 1991, 1.3 million women turned 50, joining their 35 million peers who had reached the menopausal years. In the first decade of the 21st century, more than 21 million women will become menopausal (U.S. Department of Commerce, Bureau of the Census, 1989), constituting more than one third of the female population of the United States and a significant segment of the consumers of health care. Midlife women face numerous health care decisions as they approach and experience menopause. These decisions are value laden and involve trade-offs among possible outcomes. For example, the decision to take or not take hormone replacement therapy involves trade-offs among risks of heart disease, osteoporosis, cancer, and menopausal symptoms (Colditz et al., 1995; Grady et al., 1992; Post Menopausal Estrogen/Progestin Interventions [PEPI] Trial, 1995). In a previous study of midlife women, we found women demanding information about menopause and the treatment options for menopause-related symptoms (Rothert et al., 1994). Strategies are needed to assist these women to become informed about the changes in their bodies, make decisions about self-care, and negotiate therapeutic strategies that are appropriate for them.

Midlife women want to be informed, active participants in their health care (Duffy, 1988). Researchers have reported patient dissatisfaction with available information (Caporael-Katz, 1983) and a reluctance to ask for desired information (Trinkaus, 1991). In general, nearly all patients want information about their health state and treatment options (Beisecker & Beisecker, 1990; Blanchard, Labrecque, Ruckdeschel, & Blanchard, 1988; Casileth, Zupkis, Sutton-Smith, & March, 1980; Trinkaus, 1991) and many desire an active role in decision making (Degner & Sloan, 1992; Stull, Lo, & Charles, 1984; Thompson, Pitts, & Schwankovsky, 1993). In response to patient demand, health care providers have begun to pay more attention to patient participation by attempting to involve patients in the decision-making process.

The movement to increase consumer participation in care includes the concept of self-care. Self-care describes both individuals’ efforts to maintain their own health and a political and social movement to bridge the gap between the lay public and the health care system (Caporael-Katz, 1983). Several models of the patient–professional relationship have incorporated the concepts of self-care, empowerment, and consumerism, and may serve as the basis for educational interventions designed to empower consumers. Wiens (1993) described a model of patient autonomy in which patient control, informed consent, and truth-telling provided a framework for patient decision making.

In shared decision-making models, the consumer and professional share responsibility for health care decisions equally. The consumer maintains autonomy and dignity while respecting the skill, opinions, and expertise of the professional (Roter, 1987; Schain, 1980). Roberts and colleagues (Roberts & Krouse, 1988; Roberts, Krouse, & Michaud, 1995) described a model of decision making designed to shift power and control in the client–professional relationship and empower the patient to take an active role in decision making. The efficiency and effectiveness of the clinical process was enhanced by eliciting the patient’s participation in designing the intervention. They found that patients with whom nurses utilized an active negotiated approach expressed greater perception of control over decisions than did patients in a control condition, although there were no differences in agreement with the treatment plan or intent to comply.

Kasper, Mulley, and Wennberg (1992) have developed shared decision-making programs to improve quality of care for conditions such as benign prostatic hyperplasia, low back pain, mild hypertension, and breast cancer. Patient-specific probabilities of the outcomes of treatment are presented along with video interviews with patients who have experienced the treatment. These programs are being carefully evaluated for their impact on patient outcomes but, to date, few investigators have reported programs to empower health care consumers. For example, Anderson, Funnell, Barr, Dedrick, and Davis (1991) developed a training program to teach diabetes educators to empower patients, but the effectiveness of the program was not reported. Similarly, Gray, Doan, and Church (1991) developed a model to empower persons diagnosed with cancer but, again, effectiveness of the strategies was not studied.
When empowerment programs have been evaluated, they have been shown to be effective. Thompson, Nanni, and Schwankovsky (1990) developed a simple intervention to encourage patient participation by asking women awaiting a medical appointment to list three questions to ask their physician. Women in the experimental group asked more of the questions they had wished to, reported being less anxious, had greater feelings of control, and were more satisfied with the visit in general than women assigned to a control group. Vickery, Golaszewski, Wright, and Kalmer (1988) studied the cost-effectiveness of an intervention to empower patients by encouraging self-care. They found a statistically significant decrease of 15% in total medical visits resulting in a savings of $36.65 per household with $2.19 saved for every dollar spent on intervention.

In summary, consumer decision making is an important aspect of health care delivery and midlife women represent a significant segment of current and future health care consumers. Midlife women are actively seeking information regarding menopause, long-term health risks, and symptom management strategies. In general they are frustrated with the lack of available information and seek to be actively involved in decision making around HRT and self-care. Although several studies are currently underway to develop decision support interventions (DSIs), there has been little research on the outcomes of DSIs in terms of consumer satisfaction, adherence to the decision, or cost-effectiveness.

The purpose of this research was to develop and test three forms of a decision support intervention responsive to issues women identified in a previous study. Empowerment was defined as having the skills, knowledge, and confidence (self-efficacy) to interact with the health care provider to achieve one’s personal health goals.

The general framework underlying this study was based on the concepts shown in Figure 1. The framework is not a diagram for a path analysis but, rather, shows the decision process, target areas of the decision support interventions, and measures used in this study to evaluate the effectiveness of the decision support intervention. Effective decision making depends on accurate information regarding the risks and benefits as well as the likelihoods of the relevant outcomes and an understanding of the values relevant to the decision. The intervention was designed to directly affect the information and decision elements in this process. Because today’s health care system requires efficiency as well as effectiveness as criteria for interventions and outcomes, the DSI was developed in three modes varying by intensity of interaction between written materials and active participant involvement. Measures were used to assess three aspects of the process: information, decision, and behavior.

Decision support interventions are usually based on a decision analytic framework, or decision tree (Kasper et al., 1992; O’Connor, Llewellyn-Thomas, & Drake, 1995). Structuring a decision tree over time requires three tasks: identifying the choice over time, identifying the outcomes affected by the choice, and identifying the probabilities of the outcomes occurring if each decision path is followed. Additionally, the probability of each outcome is multiplied by a value (utility weight). DSIs rarely do the formal combining of utilities and probabilities to identify a “correct” path but, instead, display the elements of the decision and explain the conse-

![FIGURE 1. Relation of interventions to decision process.](image-url)
quences of choosing each option on the outcomes (e.g., mortality and morbidity).

The decision analytic model regarding HRT was developed by Elstein et al. (1986) and judgment studies were done to describe how people use probabilistic information in making decisions (Rothert, 1982; Rothert et al., 1984; Rothert et al., 1990). The majority of people were found to focus their attention on a subset of probabilistic information rather than using the total information available.

Therefore, the DSI was developed to explicitly lay out health-related decisions at the time of menopause, including options and outcomes; to assist women to identify values and incorporate them into the decision-making process; and to provide women with skills and strategies to interact positively with their health care provider. Key elements in this model include (a) identify information the consumers want to know; (b) communicate the concept of probability so risks can be understood; (c) present data in comparable terms so trade-offs between options can be compared; (d) combine risk information and values; and (e) provide the skills and strategies for consumers to act on decisions. The intervention was designed to support each woman to become informed and to make the choice she felt was best for her, whether or not it was the choice identified by the decision analytic method. The critical outcomes were level of knowledge and whether the decision was carried out, as measured by self-reported behavior over time. Since we did not hold the decision analytic answer to be the correct one, the measure of “correctness” was the patient’s comfort with the decision, measured as resolution of decisional conflict and satisfaction with the decision. Measures to address the empowerment to interact with the health system were self-efficacy and satisfaction with provider interaction.

The research questions were (a) will the intervention effectively communicate risks and benefits, thus increasing knowledge related to menopause?; (b) will it assist women to make decisions they are satisfied with, and to which they will adhere?; and (c) will intensity of method modify the outcome variables?

For descriptive purposes, we performed an evaluation of whether the DSIs in any of the three modes produced a decision which was closer to a normative decision analytic prescription using patients’ subjective probabilities and values. Probabilities and values were measured before and after the DSIs. Expected utilities were correlated with patients’ likelihood to take HRT at both times (Holmes-Rovner et al., 1995). This was not a criterion for evaluation of the success of the interventions, as we deliberately chose not to prescribe a correct decision, consistent with the empowerment focus of the study.

METHOD

A randomized three-group design, with measurement at baseline, immediately postintervention, and at 6 and 12 months postintervention was used.

Sample

Three hundred seventy-nine women, age 40 to 65, recruited from a medium-size midwestern university community through the print and television media were randomly assigned to a group. Thirty-seven percent of the sample were between the ages of 40 and 45 and 46% were between the ages of 46 and 50. All participants could read and speak English. Participants were primarily white (94%) and college-educated (49.2%). Forty percent had household income between $15,000 and $49,000 and 46% had household income between $50,000 and $99,000. Fifty-eight percent were still having regular menstrual periods; 59% were currently experiencing symptoms of menopause or had experienced symptoms in the past; and 24% were unsure whether they were experiencing symptoms. Of the participants, 24% had not had a menstrual period for 12 months or more and 17% had menstruated within the past year but not regularly. Of the 379, 300 (79%) attended Session I. Cancellation was frequently due to scheduling conflicts or illness. Of the women who attended Session I, 252 (84%) completed all sessions and provided Time 1 and Time 2 data, and 202 (81%) provided follow-up data from monthly calendars. There was no selective attrition by education, prior self-efficacy, or experience with symptoms. Women who were postmenopausal (N = 59) were more likely to leave the study during the intervention phase, and there was a higher proportion of attrition among the small number of African American women initially participating in the study. Of 23 nonwhite participants, 8 (35%) did not complete all sessions of the intervention. It was hypothesized that these women left the study because they perceived the intervention to be geared toward white, perimenopausal women.

To decrease the likelihood of attrition from the study, a raffle for cash prizes ($25, $50, or $75) was offered to participants. Participants in Programs B and C participated in a raffle at 6 and 12...
months. Participants in Program A had no incentive to return at Time 2 (end of intervention/3 week) as their intervention was the brochure, so they were offered the raffle at Time 2 as well as Times 3 and 4. Eligibility for the raffle was contingent on having returned all interim data.

Measures
Information/knowledge of menopause was measured using a 24-item multiple-choice and true/false scale (alpha = .85) developed for the study. Content was taken from the interventions and included physiological process of menopause, changes in risk factors postmenopause, common symptoms and their treatments, and pros and cons of HRT. The instrument was reviewed by a panel of experts (nurses and physicians) for content validity and a group of lay women for face validity.

Decision making was measured with four scales. Decisional conflict was measured using a 3-item subscale of O’Connor’s (1995) Decisional Conflict Scale. Satisfaction with decision (SWD) was measured using a 6-item scale developed for use in the present study, and also used in a study of influenza immunization compliance (O’Connor, 1995). Cronbach’s alpha for the SWD was 0.86; the Decisional Conflict Scale had an alpha of .77. Construct validity was approached from the standpoint of establishing that the SWD measures a unique concept (Holmes-Rovner et al., 1996). The correlation of the SWD and its conceptually most closely associated constructs in our study, health status restrictions and decision conflict, was -.035 and -.066, respectively, after correction for attenuation. This suggests that 12% and 44% of the reliable variance in these measures is shared and the remaining variance in each is unique. Satisfaction with the most recent encounter with the health care provider was measured using a 10-item modification (alpha = .92) of the encounter-specific subscale of the Satisfaction Scale developed by Linder-Pelz and Struening (1985). The scale has been used in multiple studies and demonstrated to be a unique scale with well-established psychometrics (Linder-Pelz & Struening). Responses for all three of these scales used a Likert format ranging from 1 = strongly disagree to 5 = strongly agree. Self-efficacy related to participation in health care was measured using an 8-item (alpha = .91) modification of the scale developed by Woodward and Wallston (1987). The 10-point scale was anchored at 1 = not at all confident, to 10 = extremely confident. In previous use, the scale has been found to mediate the relation between age and desire for control of health care (Woodward & Wallston).

Behavior/adherence was measured against the woman’s own plan reflecting her goals related to exercise, calcium intake, and HRT. Women recorded adherence daily by marking an abbreviation for each activity on a calendar provided to them, with one box available for each day. The percent of times women adhered to their own plan was computed monthly, and then averaged across the 12 months. Women returned their calendar monthly and a new calendar was sent each month. With self-reported behaviors there is always a concern for social desirability bias. Individuals were rewarded for submitting the calendars, without respect to their behavior. The variance within subjects was considered one indicator that social desirability was not a major factor in the adherence response. For example, over a 12-month period, 78 of 252 (31%) of the women chose to take some kind of HRT. Of these 78, 9 (21%) stopped taking HRT. One woman started and stopped taking HRT 3 times while another woman started and stopped twice. The remaining 7 women dropped HRT completely without restarting.

Intervention
The content of the three interventions was held constant, while the intensity of involvement of the participants varied. Group A received the brochure and no other intervention; Group B met and received information in a traditional lecture/discussion format. Group C had additional activities to involve them in applying the population data to their own risk level, identifying their values, making a decision, and interacting with their health care provider.

The first intervention (Program A) consisted of a three-part brochure addressing the physiology of menopause and self-care, the pros and cons of hormone replacement therapy, and communication with health care professionals (Rothert et al., 1992). Section I of the brochure described what women could expect at menopause, including information on what menopause is, when it occurs, and the physical changes women may experience at menopause. The brochure included a discussion of the symptoms and increased risks that may accompany menopause and suggested self-care strategies. Section II of the brochure described additional risk factors to consider related to use of hormone replacement therapy and described the two main types of hormone therapy: estrogen-only therapy and estrogen combined with progesterone. The benefits and risks of each type of therapy and the
increase or decrease in death rate due to endome-
trial cancer, heart disease, and osteoporosis were
depicted numerically and graphically. Section III
of the brochure was in workbook format with
spaces to record personal and family history, men-
strual history, and questions for the health care
professional. Examples illustrated how to provide
detailed information to help health professionals
care for one’s health and sample questions were
offered to help the reader think of her own ques-
tions and concerns related to menopause.

The second program (Program B) consisted of
three 1½-hr sessions using a lecture/discussion
combined with question-and-answer format. Pro-
gram content was parallel to the brochure.

The third program, Program C, was a personal-
ized decision intervention which provided infor-
mation and experience in an active involvement
format. The intervention consisted of a series of ex-
cercises to foster active involvement in the decision
process. The program, parallel to Program B in
time spent and parallel to A and B in content, con-
sisted of three sessions, each approximately 1½ hr
long. The first session was identical to Program B
in content and format. In Session II the women had
additional activities to assist in understanding the
concepts. Women were encouraged to consider
their values relevant to a decision regarding HRT
and to recognize that their values may be different
than those of other women. They were assisted to
assess their personal risks and values using a Per-
sonal Risk Assessment form and a Problem Signif-
icance Assessment form. The basic concept drawn
from decision analysis was the combination of
probabilities (risks) and utilities (values), which
was translated to personal risk (or probability of in-
dividual experiencing a condition compared with
population data) and problem significance.
Women were asked to aggregate and combine risks
and values as a basis of their decision using a Rel-
evance Chart, which combined base rate risk, per-
sonal risks, and personal values for each of up to
seven factors important to the decision about HRT.
Because a woman’s personal health history must
be considered in the decision regarding HRT, the
women were asked to make an initial decision
about whether to initiate discussion about taking
HRT with their health care providers.

The final component focused on empowering
women to interact positively with the health care
system. Practical information was given in prepar-
ing for the visit, such as identifying the purpose of
the visit when making the appointment, preparing
a list of questions or concerns, and preparing to
discuss relevant history, signs, and symptoms.
Women were given strategies to use during the
visit to efficiently and effectively meet their goals.
Finally, the women were encouraged to assess
whether their goals were met after the visit, with
strategies to follow if they were not.

In all three programs there was no attempt to un-
derstand the gaps in knowledge or overstate the
certainty of data in areas such as breast cancer
and risks for women of color. The use of probabilistic
information was discussed and then systematically
related to the fact that good and bad outcomes can
occur with any decision. For this study, the goal of
decision making was defined to be making the
choice most likely to lead to a good outcome, while
recognizing that it was still a chance outcome that
may or may not occur. Care was taken to present
risk data in comparable terms so that women could
more clearly understand the magnitude of a risk
when phrases such as “cut the risk in half” or “in-
crease the risk six fold” were used. All risks were
placed in a common unit of measure (e.g., inci-
dence or prevalence) so that women could compare
population risks across conditions such as osteo-
porosis and heart disease. Population-based risk
factors indicating women who would be at greater
risk than standard risk were provided (e.g., thin
white women who smoke and do not exercise hav-
ing the highest risk of fracture due to osteoporosis).
Thus, women received the basic information need-
ed to identify their own personal risks.

Procedures

Groups B and C met weekly for 1½ hr for 3 weeks.
Group A met for baseline data collection and to re-
cieve the brochure at the initial meeting and for
data collection only 3 weeks later.

Program instructors were members of the Deci-

sion Making in Menopause Study research team.
Two instructors team-taught each intervention ses-
tion for programs B and C and attended the data
collection sessions for program A. Instructors were
organized into clinician/nonclinician teams. The
clinicians were a physician and three nurses. Non-
clinicians were two psychologists and a health ser-

Complete reading
The longitudinal data were analyzed using multiple regression for repeated measures, to test differences among the three intervention groups. Nominal variables, such as experimental group and time, were dummy-coded. For example, for the knowledge variable, measured at all four time points, one orthogonal dummy variable contrasted experimental groups B and C with the information-only group A. The second variable contrasted the lecture/discussion intervention group B with the decision support intervention group C. Time was treated as a variable with four nominal groups (preintervention, postintervention, 6 months, and 12 months) coded as three dummy variables in which preintervention scores were used as the reference scores. Six interaction variables representing the interaction between time and experimental group were calculated by multiplying each of the variables for time by each of the variables for experimental group. Missing data were handled by taking the mean of the nonmissing values if greater than 50% of the items were present.

RESULTS

Across all groups, knowledge increased from 62% T₁ to 87% T₄, with a preintervention mean of 15 of 24 items (SD = 5) at T₁, to a postintervention mean of 20.9 (SD = 2.6) at T₄. The r² for change over time in knowledge (.34) was statistically significant, F (3,747) = 554.6, p < .05. Knowledge level remained significantly greater than baseline with a mean of 20.5 (SD = 2.8) T₄, and a mean of 20.8 (SD = 2.7) T₄, t’s = −29.48 and 30.97, respectively, p’s < .05. Thus, the post intervention increase in knowledge was maintained over time (see Figure 2). However, knowledge increased significantly less for participants in Group A (4.9 points) compared to Groups B (7.2 points) and C (5.6 points) between T₁ and T₄, t = −5.19, p < .05. The increase for groups B (7.2 points) and C (5.4 points), pooled, remained greater than for Group A (5.1 points) 12 months later, t = −2.68, p < .05. Knowledge increased more for Group B than for Group C between T₁ and T₄, t = 3.62, p < .05, and remained greater than for Group C at T₃ and T₄, t’s = 2.80 and 3.36, respectively, p’s < .05. The magnitude of the partial correlation coefficients, pr’s = .01 and .02, indicated that these differences were relatively small, however.

Decisional conflict, measured at T₁, T₃, and T₄, was regressed on time, group, and the interaction between time and group in 3 blocks. Across all groups, decisional conflict decreased over time, F (2,498) = 27.08, p < .05. Decisional conflict was lower at T₁ (M = 2.7) and T₃ (M = 2.5) than at T₄ (M = 2.8), t’s = −8.49 and −15.99, respectively, p’s < .05. The means and standard deviations for decisional conflict at each time for each group are shown in Table 1. Although there was a significant difference between the groups at T₄, conflict decreased more in Groups A and B than in C so that there was no difference among the groups 6 and 12 months following the intervention.

There were no significant differences in satisfaction with decision by group at T₂, T₃, or T₄. Across experimental groups, satisfaction with decision was stable across time from T₂ (M = 3.9, SD = .6) to T₃ (M = 3.8, SD = .61) and T₄ (M = 3.9, SD = .60). The differences in means over time were statistically significant, F (2,498) = 5.36, p < .05, but the r² change of .01 is not practically significant. Analysis of the interaction between time and experimental group indicated that between T₂ and T₃, satisfaction with decision decreased more for Group C than for Groups A and B pooled, t = −2.49, p < .05, but the magnitude of the difference was small, pr = .01, and not practically significant (Table 1). There were no other significant differences in change in satisfaction with decision by experimental group.

Across groups, satisfaction with health care provider interaction was .2 points higher (more satisfied) 6 and 12 months following the intervention compared to preintervention. The increase in satisfaction was statistically significant, F (2,498) = 17.75, p < .05. The main effect for experimental group was not significant. Values were slightly greater 6 months following the intervention and remained significantly greater 12 months later, but there were no significant differences between Groups A, B, and C.

Self-efficacy, related to actively participating in
the health care encounter, was regressed on time, group, and interaction between time and group in 3 blocks. Across experimental group, self-efficacy increased between T₁ and T₂, t = 11.62, p < .05, and remained higher than baseline at T₄, t = 11.30, p < .05. There were no significant differences between experimental groups (see Table 1).

As shown in Figure 3, mean adherence to plan across the 12 month follow-up period was 59% (SD = .32) for exercise, 76% (SD = .31) for taking adequate calcium, and 89% (SD = .95) for adhering to the personal decision regarding HRT. There were no differences among the experimental groups on adherence for exercise, calcium, or HRT.

**Table 1. Mean Scale Scores by Group over Time**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Time</th>
<th>Group</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>n</th>
<th>M</th>
<th>SD</th>
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*p = .05.

**DISCUSSION**

The intent of this study was to develop and test three modes of decision support interventions against the quality of the resultant decision and subsequent behavior. The interventions were successful in building the knowledge base for women’s decisions. Although, on average, patients remember only 40% to 50% of the information they are told by a physician (Ley, 1985), the women in this study increased in knowledge and retained this increase over 12 months. The data indicated that all three interventions effectively communicated risks and benefits associated with menopause and HRT. Baseline knowledge scores for all three groups in this middle class, well-educated sample were low, indicating women did not have adequate information upon which to base a decision. However, the women were able to process and retain the information when it was presented within the framework of carefully designed interventions.

As in prior research (Miller & Shank, 1986), the brochure was the least effective mode of building the knowledge base, although the difference was not practically significant. The stronger result of the lecture/discussion over the personalized decision was not expected, and may be attributed to either a more familiar mode of learning, or the personalized intervention being too intense for participants to fully comprehend all of the material. It
need for labor-intensive methods, consistent with perceived needs of consumers may result in less conclude that designing interventions to meet the clinical process. Thus, it is reasonable to successfully with their health care provider. This is important to note that these women were well-educated and highly motivated to learn. Further, this research was designed to answer the questions women had asked in a previous study about the risks and benefits of HRT, alternative strategies for coping with symptoms, and how to interact successfully with their health care provider. This may be the key component that allowed a rather simple mode of delivery to be successful. Lazare and Eisenthal (1979) found that eliciting patient requests enhances the efficiency and effectiveness of the clinical process. Thus, it is reasonable to conclude that designing interventions to meet the perceived needs of consumers may result in less need for labor-intensive methods, consistent with Gray et al. (1991).

All three interventions were successful in affecting decision making, as measured by decisional conflict, satisfaction with the decision, satisfaction with the provider, and self-efficacy to interact with the health care system. Data indicated that across groups postintervention, women were marginally satisfied with their decision and remained satisfied for the 12-month duration of the study. Decisional conflict decreased from postintervention to 6 and 12 months, but the difference was small. These concepts reflected the quality of the decision so were not measured at baseline, preventing pre/post comparisons.

Results reflecting the concept of empowerment, measured by satisfaction with the health care provider and self-efficacy, showed that women indicated a positive level of satisfaction with their health care provider postintervention and this satisfaction was sustained. Self-efficacy increased from pre- to postintervention and remained higher than baseline. However, the numbers must be judged for practical significance as well as statistical significance, as the differences across the times are small. Nevertheless, the differences were measured across a 12-month period, and reflected a relatively stable change.

While it is encouraging that the most cost-effective strategy was identified as the mode of choice, this does not generalize to traditional patient information brochures that do not present the key components in the model. Further, because the sample was primarily well-educated, motivated white women, it is essential that further research assess the needs of other groups of women and develop and evaluate strategies to support their decision making. Weights of intervention aspects also could be examined using path analyses.

The behavioral impact of the decision support intervention was assessed for 12 months and led to one of the most significant findings. These women made decisions which they subsequently implemented. Adherence or “compliance,” measured against the women’s own plan rather than the standard approach of measuring compliance to the provider’s decision (Hays et al., 1994; Kravitz et al., 1993) was high. This finding is consistent with Morris and Schulz (1992) who note that, after years of research on compliance, little consistent information is known other than the fact that people do not always follow the doctor’s orders; therefore, there is a need to focus on compliance from the patient’s perspective. Mulley, Mendoza, Rockefeller, and Staker (1996) improved patient participation in the decision-making process by developing an asthma self-regulatory model of care. Patients were assisted to assess their status and plan their course of treatment based on objective airway functions. They noted patient decision making and outcomes improved dramatically.

Findings from this study support the importance of patient decision support and the necessity of understanding the patient’s decision and plan. Many of these women made decisions that varied from those that would be identified in a decision analytic model. However, the results suggest that women made informed decisions, were relatively satisfied with these decisions, and most importantly, they adhered to their own decisions over a 12-month period. Long-term treatment regimens requiring patient behavior are known to have adherence rates of approximately 50% (Sackett & Snow, 1979). Current results suggest that these rates can be improved if persons who must implement treatment regimens are provided with objective information and supported in developing their personal plans. Use of DSIs to empower consumers denotes a different relationship between the consumer and provider, and brings optimism to the historical issue of low adherence. Perhaps it is time to consider that, when measuring consumer adherence, we have been using the wrong gold standard.

REFERENCES


Rothert, M., Rovner, D., Holmes, M., Schmitt, N., Ta-