The implications of behavioral analysis for practice and research have significant potential for nursing. This present study was conducted to determine the effectiveness of nurses and patients actively participating in behavioral analysis and the implementation of behavioral strategies in order to improve the patients' self-management of their Type II diabetes. Patients (N = 156) were randomly assigned to one of four groups. The attention control group (n = 41) received routine care. The compliance group (n = 32) agreed to practice compliance behaviors related to the prescribed medical regimen. The behavioral strategies group (n = 42) participated in behavioral analysis and agreed to practice behavioral strategies. The behavioral strategies with instruction group (n = 41) participated in behavioral analysis, agreed to practice behavioral strategies, and received classes and programmed instruction about behavioral analysis and behavioral strategies. There were no outcome differences between groups relative to glycosylated hemoglobin (GHb) and weight loss. There were differences in the outcome measures in subgroups by age, gender, and employment, which have practice and research implications for the individualization of interventions using behavioral strategies.

Behavioral Analysis and Behavioral Strategies to Improve Self-Management of Type II Diabetes

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Assisting the patient with Type II diabetes (i.e., adult-onset, non-insulin-dependent diabetes mellitus) to change lifelong

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behaviors in order to adhere to the prescribed regimen has long been recognized as an important part of nursing practice. The nurse with a perspective that integrates biological, social, and psychological sciences is in a unique position to effectively assist the patient in making behavior changes that improve adherence and better metabolic control. Whereas patient education about diabetes has received considerable attention in the nursing literature, less attention has been given to patient use of behavioral strategies (Wing, 1989). Further, the vast majority of patient education materials and instruction are focused on education as a means of increasing adherence but not on behavioral strategies that will assist the patient to practice the new and expected behaviors related to the management of diabetes (Brown, 1990).

The success of behavioral therapy programs, specifically in nonpsychiatric domains, has been widely reported in the nonnursing literature over the past 20 years (Brownell & Kramer, 1989; Dubbert, Rappaport, & Martin, 1987; Glanz, 1988; Schlundt, McDonel, & Langford, 1985; Wing, Epstein, Nowalk, & Lamparski, 1986). Despite the eloquent pleas for comprehensive, multidisciplinary, long-term, and broad-based approaches for maintenance of behavior change, rarely, if ever, are nurses identified as the professionals to provide such behavior therapy (Benfari, Eaker, & Stoll, 1981; Miller, 1983). Yet, in reality, it is the nurse in direct and continuing contact with the patient who is most likely to provide health education, monitor patients' behavior, and suggest strategies that will assist patients in maintaining their health and/or managing their illness.

THEORETICAL FRAMEWORK

Behavioral therapy has its foundation in Bandura's social cognitive theory (Bandura, 1977, 1986), which integrates op-

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erant conditioning with cognitive processes and observational learning (Carmody, Istvan, Matarazzo, & Connor, 1986). The framework assumes that a person is able to self-regulate behavior and to actively participate in behavioral analysis and the application of behavioral strategies (Crouch et al., 1986). Behavioral therapy is not a simplistic process but a complex and ever evolving process (Brownell & Kramer, 1989).

Behavioral analysis, which is the application of the principles of behavior therapy and on which behavioral interventions are identified and developed, is the process by which behavior is observed, documented, and analyzed from three perspectives: the antecedent events that precede and serve as stimuli for the behavior, small steps of behavior that make up the behavior, and consequences that follow the behavior (Lewin & Lundervold, 1990).

The application of behavioral principles through behavioral analysis has demonstrated considerable effectiveness for a variety of conditions and health-related behaviors, including the management of coronary risk factors (Jeffery, 1988; Ornish et al., 1990), weight management (Jeffery, Thompson, & Wing, 1978), obesity (Brownell & Jeffery, 1987), diabetes (Glasgow, McCaul, & Schafer, 1987; Wing, 1989), hypercholesterolemia (Crouch et al., 1986), exercise (Atkins, Kaplan, Timms, Reinsch, & Lofback, 1984; Martin et al., 1984), smoking (Kamarck & Lichtenstein, 1988), health promotion behaviors (Cameron & Best, 1987), control of hypertension (Swain & Steckel, 1981), urinary incontinence (Jirovec, 1991), and behavioral problems in gerontological patients (Burgio & Burgio, 1986; Hussian, 1984; Williamson, 1986; Wisocki, 1984). In addition, family-based behavioral interventions (Carmody, Matarazzo, & Istvan, 1987), behavioral self-management programs (Brigham, 1982), and behavioral adherence programs have been investigated (Cameron & Best, 1987).

PURPOSE OF THE STUDY

Most behavioral strategies have been developed by behavioral scientists who rarely provide the type of daily hands-on care of patients provided by nurses. The nurse-patient interaction provides a type of reality testing not usually found in

intensive behavioral programs. The challenge is for nursing research to examine the principles and findings of behavioral analysis, reshape the research question from the perspective of the caregiver, and test the intervention within the nurse-patient interaction.

The purpose of this research was to address the following questions:

1. Do diabetic patients who agree to practice compliance behaviors or behavioral strategies (Groups 2, 3, and 4 combined) demonstrate better outcomes than do those in an attention control group (Group 1)?
2. Do diabetic patients who participate in behavioral analysis and agree to practice behavioral strategies (Group 3) demonstrate better outcomes than do those who agree to practice compliance behaviors related to the prescribed medical regimen (Group 2)?
3. Do diabetic patients who participate in behavioral analysis, agree to practice behavioral strategies, and receive instruction about behavioral analysis and behavioral strategies (Group 4) demonstrate better outcomes than do those who participate in behavioral analysis and agree to practice behavioral strategies without receiving such instruction (Group 3)?

METHOD

SUBJECTS

The inclusion criteria for the subjects were the following: 18 years of age or older; read, speak, and write English; and reportedly diagnosed with Type II diabetes and under physician care. The subjects were a convenience sample of 156 patients with Type II diabetes, 69 of which were recruited from a large endocrine and metabolic outpatient clinic, 22 from a special inpatient diabetic care unit, 17 from the special outpatient diabetic care clinic, and 48 from the community at large in response to newspaper advertisements. Subjects had been diagnosed as diabetic for an average of 10 years ($SD = 8.0$), and 55% of the subjects were prescribed insulin to control their diabetes. More than three quarters of the subjects ($n = 121$) had glycosylated hemoglobin (GHb) levels that were considered high (greater than 8.0%), and 92 subjects' body mass index (BMI) was within the range that is considered obese (BMI

greater than 27.8 for men and greater than 27.3 for women) (U.S. Department of Health and Human Services, 1986).

The sample had a mean age of 58 years (SD = 11.3), and 60% (n = 94) were women. More than half of the subjects reported a family/household income of $20,000 or greater, although 17% (n = 19) stated that their income was less than $10,000. Almost 50% were married and had at least some college education, and 44% (n = 68) were currently employed, whereas more than half (n = 86) were retired, unemployed, or described themselves as homemakers.

The patients were randomly assigned to one of four groups. The attention control group (n = 41) received routine care and the added attention of consistent follow-up by a clinical nurse specialist. The compliance group (n = 32) focused on behaviors directly related to the prescribed medical regimen, such as taking medications. The behavioral strategies group (n = 42) participated in behavioral analysis with the nurse and focused on one of four behavioral strategies. The behavioral strategies with instruction group (n = 41) participated in behavioral analysis with the nurse, focused on the behavioral strategies, and received classes and programmed instruction about behavioral analysis and behavioral strategies. The patients chose and identified in a written contract a specific behavior implemented between visits. A patient-selected reinforcer was provided by the nurse in return for self-reports and self-monitored records of practicing the behavior.

The treatment period for all four groups averaged 12.8 months (SD = 7.5), with a range from 1.5 months to almost 29 months. For subjects in the compliance and behavioral treatment groups (Groups 2, 3, and 4 combined), treatment time averaged 12.0 months (SD = 6.4), with a range from 1.5 months to 24.5 months.

Statistical analysis, using chi-square and analysis of variance (ANOVA), confirmed no association between group assignment and subjects' gender, marital and employment status, education, income, use of insulin, and baseline measures of GHb, weight, and BMI.

PROCEDURE

Following approval from the Human Subjects Review Committee, potential subjects were identified using the clinic ap-

pointment record or through responses to advertisements. After the study was explained to the patient and written consent was given, baseline data were obtained and an appointment was made to begin the intervention. The baseline data consisted of demographic information, height, weight, and GHb.

INTERVENTION

Subjects in the attention control group received routine care but were contacted in the clinic, by mail, or by telephone in order to collect follow-up data. Subjects in the compliance and behavioral treatment groups received routine care and focused on a behavior, which was ultimately identified in a contract with the nurse at each appointment. Subjects in the compliance and behavioral treatment groups were followed by the same nurse for all subsequent visits. The discussion of the compliance behavior or the behavioral analysis was a part of the nursing process, flowing naturally from the nurse-patient interaction, and added an average of 30 minutes to the appointment. Dates and times of subsequent appointments were negotiated by the nurse and patient; however, most frequently, these were made to coincide with the clinic appointment. The nurses who met with the patients had a solid background in the principles of behavioral analysis from having participated in similar research and/or receiving regular ongoing supervision and instruction from the investigator. Biweekly meetings were held during which the implementation of the protocol was discussed.

Subjects in the compliance group were asked to identify an aspect of their prescribed routine that they were most interested in improving. For example, such behaviors could include, but were not limited to, medication taking, appointment keeping, weight loss, or exercise.

Subjects in the behavioral strategies group were encouraged to discuss various aspects of their prescribed regimen and to focus on an aspect of their regimen that would be achievable and "worth" their effort between this and the next appointment. However, rather than choosing to simply increase medications as a target behavior the patients chose a behavioral strategy that would support the likelihood of taking medications. The

patients chose from among four behavioral strategies: self-monitoring, stimulus control (i.e., controlling antecedents that stimulate the behavior), breaking behaviors down into small steps, and self-reinforcement. For example, the patient would agree to self-monitor medication behavior, indicating day, time, place, and circumstances before and after taking the medications. During the second visit, the patient and nurse would analyze the baseline data. As a result of this behavioral analysis, the patient would choose to increase medications by a specific amount and would trigger the medication behavior by setting up a cue for taking the medications. An example of such a cue would be placing the pills and water in a significant location so as to serve as a reminder.

In the behavioral strategies with instruction group, the subjects also identified behavioral strategies but received instruction about behavioral analysis and those strategies. The instruction was given in a 1-hour class. These patients were also given a programmed instruction workbook developed specifically for this project. The workbook was completed at the patient's own pace. Each phase of the workbook was reviewed by the nurse and the patient.

All of the patients in the compliance and behavioral treatment groups identified in a written contract a behavior and a reinforcer in return for having completed the behavior. The reinforcers were chosen by the patients. Examples were postage stamps, greeting cards, paperback novels, or personal items, such as shampoo, lotion, and talcum. In some instances, the patients chose a more expensive item that was earned by collecting tokens toward the payment of the item. The average cost of each reinforcer was $3.25. Finally, the contract was signed by both the patient and nurse and was dated. The patient was given a copy, and a copy was retained for the patient's file. The contract often included a date or deadline, sometimes identified a long-term goal, and might have a bonus clause.

DATA ANALYSIS

The outcome variables were percentage change in GHb and percentage change in weight. The research questions were answered using *t* tests, which compared means of the outcome

variables in two groups. Pearson correlation coefficients and *t* tests were done to examine the influence of demographic characteristics on the outcome variables and behaviors. ANOVA, Kruskal Wallis one-way ANOVA tests, and chi-square were used to describe the behaviors.

FINDINGS

COMPARISON OF GROUPS ON OUTCOME VARIABLES

Table 1 provides the outcome variables, percentage change in GHb, and percentage change in weight for the groups. Negative changes in both measures are desirable. The results showed that patients who focused on compliance behaviors or behavioral strategies (Groups 2, 3, and 4 combined) did not demonstrate significantly better changes in GHb ($t[133] = -1.08$, $p > .05$) or weight ($t[154] = 0.88$, $p > .05$) than did those in the attention control group (Group 1). Patients who focused on behavioral strategies (Group 3) did not demonstrate significantly better changes in GHb ($t[64] = -1.30$, $p > .05$) or weight ($t[72] = 1.29$, $p > .05$) than did those who focused on compliance behaviors (Group 2). Patients who focused on behavioral strategies and received instruction in behavioral analysis and behavioral strategies (Group 4) did not demonstrate significantly better changes in GHb ($t[76] = 0.02$, $p > .05$) or weight ($t[81] = -1.78$, $p > .05$) than did those who focused on behavioral strategies and did not receive such instruction (Group 3).

RELATED FINDINGS

Influence of Demographic Characteristics on the Outcome Variables and Behaviors

Several demographic variables were found to be related to the outcome variables. Age was significantly inversely related to percentage change in GHb for the entire sample ($r = -.26$, $p < .01$) and for subjects in the compliance and behavioral treatment groups ($r = -.25$, $p < .01$). As age increased, there was a percentage decrease in GHb. There was no significant relationship between age and percentage change in weight for

Table 1
Outcome Variables for Groups

Group	Outcome variable: Percentage change in GHb[a]			Outcome variable: Percentage change in weight[b]		
	M	(*SD*)	*n*	*M*	(*SD*)	*n*
Attention control (1)	–4.98	(26.08)	33	1.30	(6.97)	41
Compliance (2)	–5.02	(20.37)	24	0.47	(6.08)	32
Behavioral strategies (3)	1.73	(20.27)	42	–1.52	(6.89)	42
Behavioral strategies with instruction (4)	1.60	(25.93)	36	1.54	(8.71)	41
Compliance and behavioral treatment (2, 3, and 4 combined)	0.09	(22.41)	102	0.13	(7.45)	115

Note: GHb = glycosylated hemoglobin.
a. The formula is [(final GHb – initial GHb) / initial GHb] × 100. A negative value means the subjects' GHb decreased. The smaller *n* for the percentage change in glycosylated hemoglobin compared to the percentage change in weight is owing to treatment time being defined as time in months from initial to final weight.
b. The formula is [(final weight – initial weight) / initial weight] × 100. A negative value means the subjects' weight decreased.

the entire sample ($r = .13$, $p > .05$) or for the compliance and behavioral treatment groups ($r = .11$, $p > .05$).

There were no significant differences by gender for percentage change in GHb for the entire sample or the compliance and behavioral treatment groups. However, there was a significant difference in percentage change in weight for the entire sample ($t[106.93] = 2.53$, $p < .05$) for men ($M = 2.3\%$, $SD = 8.3\%$) versus women ($M = -0.8\%$ [a decrease], $SD = 6.4\%$) and a trend in this direction when examining only the subjects in the compliance and behavioral treatment groups ($t[75.03] = 1.9$, $p < .06$). Further, in the compliance and behavioral treatment groups, men averaged significantly fewer completed behaviors ($t[112.68] = 2.57$, $p < .05$) and fewer diabetes control-related completed behaviors ($t[111.25] = 2.50$, $p < .05$) than did women (see Table 2). Diabetes control-related completed behaviors included compliance behaviors or behavioral strategies in completed contracts concerned with reducing weight, exercising, dietary planning, and self-monitoring blood glucose.

Table 2
Influence of Gender on Number of Behaviors

	Number of behaviors			
	Number of completed behaviors[a]		Number of diabetes control-related completed behaviors[b]	
Gender	*M*	(*SD*)	*M*	(*SD*)
Men	4.9	(3.4)	2.5	(2.0)
Women	6.9	(5.1)	3.8	(3.5)

a. All behaviors in completed contracts.
b. Diabetes control-related behaviors in completed contracts concerned with reducing weight, exercising, dietary planning, and self-monitoring blood glucose.

There was a significant difference in percentage change in GHb according to employment status for the entire sample ($t[132] = 2.3$, $p < .05$). Subjects who were not employed had an average percentage decrease of 5.0% (*SD* = 23.5%) in their GHb, whereas subjects who were employed had an average percentage increase of 4.2% (*SD* = 22.5%). The not-employed group consisted of 31% retired, 18% homemakers, and 7% student, unemployed, and other. This difference was no longer significant when considering only the subjects in the compliance and behavioral treatment groups, although the same pattern in GHb existed, with those who were not employed having an average percentage decrease of 3.2% (*SD* = 21.3%), whereas those who were employed had an average percentage increase of 5.0% (*SD* = 23.4%). There were no significant differences in percentage change in weight by employment status.

Pattern of Completed Behaviors Across Groups

The 115 subjects in the compliance and behavioral treatment groups completed an average of 6.5 (*SD* = 4.5) behaviors (range 1-25). Of these, an average of 3.4 were diabetes control-related (*SD* = 3.1) (range 0-13). There was a statistically significant difference among the groups for number of completed behaviors, $F(2, 112) = 3.1$, $p < .05$. Scheffé procedure indicated that this difference was between subjects in the compliance group, who completed an average of 4.7 (*SD* = 3.5) behaviors, compared to subjects in the behavioral strategies with instruction group, who completed an average of 7.3 (*SD* = 5.9) behav-

iors. There was no significant difference among the groups for number of diabetes control-related completed behaviors.

Owing to nonnormal distributions, Kruskal Wallis one-way ANOVA tests were done to determine if there were any significant differences between the groups in number of completed behaviors of different types. A significant difference was found for self-monitoring blood glucose ($\chi^2 = 10.27$, $n = 115$, $p < .05$), with the behavioral strategies group (mean rank = 65.88) completing more behaviors of this type than did the other two groups (compliance group mean rank = 50.66; behavioral strategies with instruction group mean rank = 55.66). The behavioral strategies with instruction group (mean rank = 65.01) and the behavioral strategies group (mean rank = 60.36) completed significantly more miscellaneous behaviors, such as returning study questionnaires, medication taking, appointment keeping, and smoking cessation, than did the compliance group (mean rank = 45.92), $\chi^2 = 6.84$, $n = 115$, $p < .05$. Consistent with the intervention, significant differences were found for learning and practicing behavioral strategies ($\chi^2 = 36.98$, $n = 115$, $p < .05$), with the behavioral strategies with instruction group completing the greatest number (mean rank = 75.66), followed by the behavioral strategies group (mean rank = 61.24) and then the compliance group (mean rank = 31.13). There were no significant differences between the groups for the other types of behaviors (exercising, dietary planning, and reducing weight).

Using the behaviors as the unit of analysis, it was found that 89.5% (848) of the behaviors were completed by the compliance and behavioral treatment groups, whereas 10.5% (99) of the behaviors were not completed. There was no significant association between the behaviors of different types and whether or not the behaviors in the contracts were completed by the subjects, $\chi^2(5, n = 947) = 4.96$, $p > .05$. A significant association was found between the completed behaviors of different types and the groups, $\chi^2(10, n = 848) = 136.43$, $p < .05$ (see Table 3). The compliance group compared to the other two groups completed a greater percentage of behaviors for reducing weight. Consistent with the intervention, the behavioral treatment groups completed a greater percentage of behaviors for learning and practicing behavioral strategies compared to the compliance group.

Table 3
Types of Behaviors, by Compliance and Behavioral Treatment Groups

	Groups					
	Compliance (2)		Behavioral strategies (3)		Behavioral strategies with instruction (4)	
Type of behavior	*n*	%	*n*	%	*n*	%
Exercising	48	28.7	61	18.8	79	22.1
Dietary planning	35	21.0	34	10.5	42	11.8
Reducing weight	39	23.4	20	6.2	31	8.7
Self-monitoring blood glucose	1	0.6	44	13.6	10	2.8
Learning and practicing behavioral strategies	4	2.4	98	30.2	122	34.2
Miscellaneous	40	24.0	67	20.7	73	20.4
Total	167	100.0	324	100.0	357	100.0

The completed behaviors of different types were recategorized into the following different types of behavioral strategies: patient instruction in the behavioral strategies, self-monitoring, stimulus control, breaking exercise into small steps, breaking eating into small steps, and miscellaneous. It should be noted that the compliance group occasionally chose behavioral strategies. The behavioral strategies were not chosen on the basis of behavioral analysis but, rather, reflected the patients' familiarity with such strategies, which are widely reported in the lay literature for time management, exercise, diet, and so forth. Owing to nonnormal distributions, Kruskal Wallis one-way ANOVA tests were done to determine if there were any significant differences between the groups in number of completed behavioral strategies of different types. A significant difference was found for patient instruction in the behavioral strategies ($\chi^2 = 66.03$, $n = 115$, $p < .05$), with the behavioral strategies with instruction group (mean rank = 85.60) completing more behavioral strategies of this type than did the other two groups (compliance group mean rank = 42.73; behavioral strategies group mean rank = 42.69). The behavioral strategies with instruction group (mean rank = 63.49) and the behavioral

Table 4
Types of Behavioral Strategies, by Compliance and Behavioral Treatment Groups

Type of behavioral strategy	Group					
	Compliance (2)		Behavioral strategies (3)		Behavioral strategies with instruction (4)	
	n	%	*n*	%	*n*	%
Patient instruction in behavioral strategies	4	2.4	17	5.2	75	21.0
Self-monitoring	40	24.0	107	33.0	55	15.4
Stimulus control	15	9.0	25	7.7	53	14.8
Breaking exercise into small steps	49	29.3	67	20.7	77	21.6
Breaking eating into small steps	22	13.2	41	12.7	27	7.6
Miscellaneous	37	22.2	67	20.7	70	19.6
Total	167	100.0	324	100.0	357	100.0

strategies group (mean rank = 62.95) completed significantly more miscellaneous behavioral strategies concerned with returning study questionnaires, self-reinforcement, stress reduction, and so on than did the compliance group (mean rank = 44.47), $\chi^2 = 8.17$, $n = 115$, $p < .05$. There were no significant differences between the groups for the other types of behavioral strategies (self-monitoring, stimulus control, breaking exercise into small steps, and breaking eating into small steps).

Using the behavioral strategies as the unit of analysis, it was found that there was no significant association between the behavioral strategies of different types and whether or not the behavioral strategies in the contracts were completed, $\chi^2(5, n = 947) = 5.44$, $p > .05$. A significant association was found between the completed behavioral strategies of different types and the groups, $\chi^2(10, n = 848) = 92.48$, $p < .05$ (see Table 4). The behavioral strategies with instruction group completed a greater percentage of contracts for patient instruction in the behavioral strategies compared to the other two groups. Differences between the groups were evident for self-monitoring, with the behavioral strategies group completing a greater

percentage of contracts for this strategy than did the other two groups.

DISCUSSION

This study of patients with Type II diabetes compared an attention control group and three groups who agreed to practice compliance behaviors or behavioral strategies after having participated in behavioral analysis. The primary hypotheses were not supported; that is, no differences were seen between groups relative to GHb improvement and weight loss. Given the intensity of the individualized attention, the collaborative behavioral analysis, and the collaborative development of the contingency contract, this is a surprising finding. However, Morgan and Littell (1988) reported a similar finding in a study of Type II diabetic subjects who identified in written contracts specific behaviors implemented between home visits.

Several factors might explain the lack of differences. There were no data to measure the degree to which new behaviors were practiced and old behaviors were changed other than patients' self-reports and self-monitored records. In addition, no reliable and valid data were obtained on activity levels and their relationship to caloric intake. An increase in exercise and a reduction of calories should have had an effect on GHb and weight.

Other issues related to the lack of significant differences were duration of the intervention and the small sample. It is possible that a longer duration for the intervention, follow-up after completion of the intervention (Stunkard, Craighead, & O'Brien, 1980), and a larger sample (Freiman, Chalmers, Smith, & Kuebler, 1978) might have revealed differences.

Research relative to adherence and behavior change has long suggested the need to individualize the intervention based on behavioral analysis with the nurse or therapist (Levenkron & Greenland, 1988). The findings from this study suggest that individualization of the intervention needs to be sensitive to such issues as age, employment, and gender. For example, analysis of the entire sample demonstrated significant differences in the reduction of GHb for the older subjects and for

those not working. Women completed more behaviors than the men did, and they also completed more diabetes control-related behaviors. Future research needs to address specific age, employment and gender differences with corresponding adjustments in behavioral strategies to better respond to specific differences of the individual.

APPLICATION TO NURSING

Health education, self-management, and behavior change have been of significant interest to nursing practice. Yet the lack of attention in nursing research and nursing practice (except for possibly mental health nursing) to behavioral analysis and behavioral strategies is significant. This is in contrast to the reported success of such strategies in disciplines with a strong behavioral focus, such as psychology, public health, rehabilitation, social work, education, engineering (industrial and organizational), and business (management and marketing).

Nursing is uniquely positioned to contribute to the knowledge base of behavioral therapy, behavioral analysis, and behavioral strategies for improving patient outcomes. Nursing education and the nurse-patient relationship provide opportunities that are not afforded the other disciplines. Specifically, nursing education and practice emphasize recognition of the multiple environments that influence patient behavior. This educational background combined with familiarity of the clinical environment and knowledge of the disease process and prescribed regimen provide the nurse with significant opportunities to effectively use a behavioral approach. Nurses have more consistent, daily, long-term, hands-on experience with both the patient and family than most other health disciplines. All of the above provide the nurse with varied and unique opportunities to understand the patient's multiple environments and to effectively assist the patient in behavioral analysis.

The evidence reported by other disciplines supports the success of behavioral analysis and behavioral strategies. However, as this study indicates, the investigation of the effectiveness of behavioral analysis and behavioral strategies requires further exploration in both nursing practice and nursing research.

Generally, behavioral analysis has been evaluated in relation to long-term chronic problems. However, use for short-term problems in the acute care setting should be evaluated. For example, weaning the patient from the ventilator, implementing self-medications, and self-care of wounds and dressings may be facilitated with a behavioral approach. Behavioral strategies should also be evaluated for use by the patient and family who must deal with nursing care issues in the home. For example, behavioral analysis could be applied by the nurse and family who are caring for the elderly, confused patient, particularly those with Alzheimer's disease.

Finally, it should be noted that the nurse's behavior has a significant influence on patient behavior. Behavioral analysis of the nurse's behavior would reveal the complex stimuli and contingencies that nurses, albeit unintentionally, provide that influence patient behavior. Increased awareness of how nursing behavior stimulates patient behavior could produce new directions for nursing research and practice that, in turn, would more effectively support desired patient behavior.

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