Step 3. Calculate the weighted score. Weighted scores are calculated by tallying the total score associated with each category and multiplying that score by the weighted value assigned to the category.

The assignment of weighted values is essentially a judgmental process; therefore, no set of weighted values can be applied universally. One can identify weighted values to his or her own liking. Some may identify the Problem Statement part of a research report to be highly important; others will be more concerned with the Methodology section of a research report. Thus, weighted values assigned will be arbitrary based on some judgment or rationale. Table 14.4 provides an example of a perfectly scored Research Appraisal Checklist with specified weighted values and a total weighted score. Table 14.5 is an example of a scored Research Appraisal Checklist with specific weighted values associated with the eight categories.

Research Critique of a Quantitative Study

The following is an example of an author's research critique of several sections of a quantitative research report.

Title

Patient Empowerment Program for People with Diabetes

TABLE 14.4 **Example of Research Appraisal Checklist Worksheet**

Category	Total Possible Score	Weight	Weighted Score
Title	12/12	5%	5
Abstract	16/16	5%	5
Problem Statement	36/36	10%	10
Review of Literature	24/24	10%	10
Methodology			
Part A	20/20	15%	15
Part B	20/20	15%	15
Part C	16/20	15%	15
Data Analysis	16/20	10%	10
Discussion	28/28	10%	10
Form and Style	12/12	5%	5
TOTALS	200	100%	100

TABLE 14.5 **Example of Research Appraisal Checklist Worksheet After Critiquing a Research Report**

Category	Total Possible Score	Weight	Weighted Score
Title	9/12	5%	3.75
Abstract	10/16	5%	3.13
Problem Statement	29/36	10%	8.05
Review of Literature	20/24	10%	8.3
Methodology			
Part A	12/20	15%	9
Part B	14/20	15%	10.5
Part C	12/16	15%	11.25
Data Analysis	8/16	10%	5
Discussion	24/28	10%	8.57
Form and Style	9/12	5%	3.75
TOTALS	200	100%	71.3

CRITIQUE The title is brief but conveys to the reader one of the major variables under study. The sample is implied by the phrase, "people with diabetes." However, the reader cannot ascertain whether the sample being studied refers to those with type 1 or type 2 diabetes.

Problem Statement

Diabetes patient education has long been viewed as a process designed to provide patients with the knowledge, skills, and motivation to manage their diabetes. A compliance/adherence approach regarding the philosophy and practice of diabetes patient education has prevailed for the past two decades. Within this model of care, behavioral strategies were used to increase compliance with recommended treatments. To more adequately understand and improve diabetes self-management, different models of care are needed that improve upon previous research. Recently, patient empowerment has been offered as an alternative to the compliance/adherence approach to diabetes management and patient education. The purpose of this proposed clinical study is to test the feasibility of a patient empowerment program. The program was designed by Feste (1991) and does not focus on the provision of information. Instead, the program helps individuals with diabetes develop skills and self-awareness in the areas of goal-setting, problem-solving, stress management, coping, social support, and motivation.

CRITIQUE The statement of the problem is clearly stated and constitutes an effort to improve patients' diabetes management. This is a very important issue, particularly in the current health-care management cost-containment environment. The problem is researchable and provides direction for specifying the research design and methodology. The purpose statement is clear in stating what the study hopes to accomplish.

Review of the Literature

Type 2 diabetes is the most common form of diabetes and accounts for 90 percent of all diabetes in the United States. However, many cases go undiagnosed. In the United States, the prevalence of type 2 diabetes is lowest in Caucasians (non-Hispanic whites) and elevated in African American, Hispanic American, and Native American populations. Regardless of its prevalence in different populations, type 2 diabetes is a serious disease that warrants the same comprehensive treatment as that given to individuals with type 1 diabetes. There is scientific evidence that early detection, treatment, and rigorous attention to self-care, facilitated by quality diabetes education, can significantly reduce the incidence and progression of diabetes (DCCT Research Group, 1993). Results of the Diabetes Control and Complications Trial (DCCT) led to reevaluation of the team concept and definition of team members' roles. The burden of diabetes can have a negative effect on the life satisfaction of individuals and their families. Individuals with type 2 diabetes need to take personal responsibility for their own disease management.

Patient empowerment has been offered as an alternative to the knowledge model approach to diabetes management and patient education (Anderson, Funnell, Barr, Dedrick, and Davis, 1991; Funnell, Anderson, Arnold, Barr, Donnelly, Johnson, Taylor-Moon, and White, 1992). Whereas it had been common to speak of noncompliance, behavior modification, and glucose control, the empowerment model refers to self-awareness, personal responsibility, informed choices, and quality of life (Feste, 1992). The notion of empowerment is appealing because of its association with such concepts as coping, social support, personal efficacy, and self-esteem (Kieffer, 1984). Rubin and Peyrot (1992) argue that new models of care need to be explored that incorporate psychosocial education as a routine and significant component of diabetes care and education.

CRITIQUE The literature review focuses on the compliance/adherence approach to diabetes education and an empowerment approach to diabetes management. As noted by the researcher, the incidence of diabetes and the severity of complications warrant special attention of efforts to improve health and quality of life. However, references in support of expectations that DCCT results apply to type 2 diabetes patients should be provided.

The effectiveness (or lack) of the compliance/adherence approach used for the past two decades is not clearly described. If this approach has been shown to have an impact on the proposed dependent variables, it would make sense to compare the empowerment approach to the compliance/adherence approach to establish whether the empowerment approach has an effect over and above that of "usual care." Likewise, the researcher does not review studies that have used other diabetes management approaches tailored to individual patients. Primary sources are used, with references complete and integrated into the development of the study.

Hypotheses

Diabetes education that focuses on self-management, self-efficacy, and empowerment issues significantly:

- Increases positive attitudes and self-efficacy as measured by selective subscales of these testing instruments: Diabetes Attitude Scale, Self-Efficacy, and Diabetes Care Profile.
- Decreases negative attitudes as measured by appropriate DCP subscales.
- Improves glycemic control, as measured by a decrease in glycosylated hemoglobin (HbA_{1c}).

CRITIQUE The researcher clearly identifies the study hypotheses with appropriate operational definitions of how variables will be measured.

Methodology: Research Design

The proposed study is an experimental design. Patients will be randomly assigned to either an intervention or a control group. The intervention will be organized as six 2-hour group sessions held weekly. Each session will be presented by the diabetes nurse educator and dietitian to promote consistency of the intervention. At the end of 6 weeks, all subjects (intervention and control) will complete the set of questionnaires a second time. The second set of questionnaires will serve as a post-program test for the intervention group. The control group will then complete the six-session program. At the end of 12 weeks, all subjects will complete the questionnaires for a third time and provide another blood sample. This data will serve as the post-program data for the control group and as 6-week follow-up for the intervention group. The control group will return for its follow-up 6 weeks later, completing the questionnaires another time, along with a blood sample.

CRITIQUE A strength of the proposed study is the experimental design. Criteria for study inclusion and exclusion were described appropriately. The research design describes a 6-week waiting period for control subjects, after which they receive the empowerment program. This design does not offer an uncontaminated control group for the baseline to 12 weeks pre- to post-comparison of major outcome variables. This is a flaw in the design that could be removed by not offering the empowerment program to the control group. If the protocol is followed as written, the experimental group would have a lag of 12 weeks between baseline and follow-up measures of outcome variables, and the control group would have 18 weeks. The times should be equal.

Methodology: Sample

Criteria for inclusion in the clinical study are as follows. All subjects who are diagnosed with type 2 diabetes followed by the Diabetes Clinic will be asked to participate in the study. Type 2 is very different from type 1 diabetes. Type 2 develops classically in an older population and may or may not require use of therapeutic insulin. Individuals are usually controlled by diet, exercise, and an oral hypoglycemic agent. A small percentage of individuals will be on combination therapy (use of insulin and oral hypoglycemic). Criteria for enrollment includes English- or Spanish-speaking adults; diagnosis of diabetes for a minimum of 1 year; and no major complications associated with diabetes. The existence of serious illness or major complication, such as visual impairment, end-stage renal disease, or lower extremity amputation, will be reason for study exclusion.

CRITIQUE The study sample is not adequately defined. For example, there is no information regarding age, gender, or educational levels and how these will be controlled. Likewise, although subjects must have been diagnosed with diabetes for a minimum of 1 year, there is no stated restriction for length of time since first diagnosed. How will this variable be treated? Although both English- and Spanish-speaking patients will be recruited, there is no indication in the study that the intervention group leaders need to speak Spanish. It is also not clear whether separate Spanish-speaking groups will be formed. The researcher does not specify if the target population is truly representative of the entire diabetic population. Are all subjects at the institution referred to and seen at the Diabetes Clinic? If not, how are referred subjects different from subjects not referred?

Methodology: Data Collection Procedures

The diabetes clinical nurse specialist employed by the institution will help identify eligible subjects from those who attend the Diabetes Clinic. All patients will receive a letter from the principal investigator inviting them to participate in the study. Interested patients will be asked to attend an orientation session, where a discussion about empowerment along with a sample worksheet will be discussed. All patients who choose to participate will sign an informed consent form, complete a set of questionnaires, and have a blood sample drawn for glycosylated hemoglobin (HbA_{1c}). Patients will be randomly assigned to either the intervention or control group.

CRITIQUE The researcher proposes to invite subjects to an orientation session where issues of empowerment will be discussed. The purpose of this discussion with all patients is not clear (motivational?). One wonders what the impact of such a session will be on those who are later randomized to the control group. If this session had a positive/motivational impact on control subjects, then the effect of the intervention would be more difficult to detect.

Methodology: Data Collection Instruments

Diabetes Attitude Scale (DAS)

Diabetes patients' attitudes will be measured with selected subscales of the DAS and selected subscales of the Diabetes Care Profile (DCP). The DAS subscale measures (1) patients' attitudes toward compliance, (2) impact of diabetes on their quality of life, and (3) views about patient autonomy. The two DCP subscales measure (1) overall positive and (2) overall negative attitudes about living with diabetes. Both the DAS and DCP are self-administered paper-and-pencil questionnaires composed of several subscales. Patients are asked to read each statement and place a checkmark next to the word or phrase that is closest to their opinion about each statement. Items are scored by assigning five points to "strongly agree," four points to "agree," three points to "neutral," two to "disagree," and one point to "strongly disagree." Internal consistency for each subscale has been determined through the use of Cronbach's alpha coefficients for each subscale and ranges from 0.69 to 0.86 (Anderson, Donnelly and Dedrick, 1990). Self-efficacy measures were developed for the specific content areas of the patient empowerment program. The self-efficacy subscales measured the subject's perceived ability to identify areas of satisfaction related to living with diabetes, identify and achieve personally meaningful goals, cope with emotional aspects of living with diabetes, manage stress, attain appropriate social support, be self-motivated, and make cost/benefit decisions about making behavior changes related to living with diabetes. Glycosylated hemoglobin is a biological marker for diabetes control. It is a routine measure of the average blood glucose control for a previous 3-month period. Subjects in good control will have an HgbA$_{1c}$ value of <8%.

CRITIQUE The outcome measures selected are well described and related to the hypotheses under study. There is, however, no validity information for selected subscales. Only some of the DAS and DCP subscales will be used without explanation as to whether it is appropriate to do so. Why were these subscales selected? What do the scores mean? The description of the self-efficacy measures was equally lacking sufficient psychometric properties. Likewise, the blood glucose control measure needs more discussion. Who, for example, will draw the blood? Who will analyze it? Who will pay for it?

Methodology: Data Analysis

The sample will be described using descriptive statistics. Sociodemographic variables will be described using frequency distributions and appropriate measures of central tendency and variability. Hypotheses 1 and 2 will be analyzed by Student's *t*-tests. The *t*-test will be used to determine if there are differences between mean scores of attitudes and self-efficacy pre-program and post-program (6 weeks).

CRITIQUE The plan of analysis is appropriate but needs to be clearer in terms of detail. Although not described, the *t*-tests are presumed to compare mean pre-test to post-test change scores for the two groups. In addition, does this mean all self-efficacy subscales will be combined with the subscales from the DAS and DCP for analysis or that separate analysis will be performed for each subscale?

Results and Findings

Demographic characteristics of the sample are displayed. The majority of subjects were older-aged, men, and overweight. All three hypotheses were supported. Those individuals in the intervention group had significantly higher scores on the following self-efficacy subscales: setting goals, managing stress, obtaining support, and making decisions when compared with those subjects in the control group. Likewise, subjects in the intervention group had a more positive attitude toward diabetes and improvement in glycosylated hemoglobin levels. Findings were consistent with Anderson's (1995) study.

CRITIQUE Findings were clearly stated and substantiated by the data presented. The researcher failed to discuss study limitations.

OVERALL STRENGTHS With only about one-half of all patients with chronic diseases actually staying on their treatment regimens, new approaches to diabetes education must be tested. Patient empowerment is one approach that seems relevant to diabetes self-management. The cited literature identified major published studies related to empowerment and diabetes education. The background and experience of the researcher and consultants are strong.

OVERALL WEAKNESSES The overall lack of detail, unfortunately, makes it difficult to evaluate the likelihood that this study will yield new and useful data. The question of how the proposed empowerment program is different from other educational programs designed for people with diabetes has not been adequately addressed nor has the question of whether the program actually "empowers" people to change.

Research Critique of a Qualitative Study

The following is an example of a research critique of several sections of a qualitative research report.[5]

Purpose

The diagnosis of diabetes brings with it a regimen that has a major impact on an individual's daily practices and lifestyle. The purpose of this grounded theory study was to investigate the experience of living with insulin-dependent diabetes mellitus.

CRITIQUE The purpose of this qualitative grounded theory study is clearly articulated.

Identified Problem for Study

At the beginning of this study, I was deeply committed to the value of diabetes education programs, the need for knowledge for clients with diabetes, and the importance of diabetes control for positive health outcomes. However, I had an aversion to the word "compliance" and had begun to doubt the value of compliance/adherence relationships between diabetes clients and their educators. A review of the literature convinced me that the compliance/adherence educational framework typical of current diabetes education programs does not accurately describe, account for, or explain the experience of living with diabetes. Despite extensive research in diabetes education and social learning interventions, neither adherence nor glycemic control has been achieved. Also, a causal relationship link has not been established between these educational approaches and the desired metabolic outcomes. Consequently, a strong rationale exists for taking a new look at diabetes from the perspective of the client rather than from that of the health professional.

CRITIQUE In grounded theory, the research problem is as much discovered as the process that resolves it. The researcher moved into an area of interest with no specific problem in mind as evidenced by the type of question asked, "What is the experience of living with insulin-dependent diabetes mellitus (type 1 diabetes)?"

Sample

Study subjects were recruited through two endocrinologists who had been informed of the study methodology and asked to refer only adults with type 1 diabetes who were in good control. Two females and two males agreed to participate in the study.

CRITIQUE There is insufficient detail about the sampling procedure and study participants. In grounded theory, a predetermined sample size is not calculated. Theoretical sampling is continued until the categories are saturated.

Methodology

Grounded theory was selected as a research methodology. Each participant was seen several times. The purpose of the first meeting was to establish rapport, explain the study, allow opportunity for questions, and obtain written consent. At the next session, an interview was conducted using open-ended questions; this interview was audio-taped and transcribed verbatim. At the end of the interview, instructions were given for writing a personal paper about diabetes and completing a 3- to 5-day journal.

CRITIQUE The qualitative method is clearly stated. Additional information regarding assumptions associated with grounded theory would be helpful to the reader.

Data Collection Procedures

A comprehensive and accurate picture of the diabetes experience for the participants was obtained by triangulation from three data sources: interviews and two written tasks. The written tasks included preparing a paper about their personal diabetes stories and keeping a three- to five-page journal to document thoughts related to diabetes. Each participant was seen several times, twice for formal interviews and one or more times for more informal meetings.

CRITIQUE A more detailed discussion of data collection procedures is warranted. Overall, how long was data collection for the entire study? How long were the individual interviews? Were they all audio-taped?

Data Analysis: Organizing/Categorizing/Summarizing

Transcripts of interviews, diabetes papers, and journals were examined and coded line by line to identify underlying processes. Coded data that seemed related were grouped into categories. Throughout the coding, data collected through interviews, diabetes papers, and journals were constantly compared for similarities and differences. As data collection and analysis continued, categories were collapsed into more general categories until the underlying theory of "becoming diabetic" emerged, a theory of integration.

CRITIQUE The researcher speaks about coding data after the interviews. How many original categories were identified? Very little information is provided on how the data were summarized for ease in theme identification. Reference is made to the underlying theory of "becoming diabetic." However, there is no literature review, which would have facilitated the reader's understanding of how the categories were recognized and accepted. In a grounded theory study, the review of literature does not take place until after problem identification. The grounded theorist begins by collecting data in the field and generating a theory. As the theory becomes sufficiently grounded and developed, the literature in the field is reviewed and related to the developing theory.

Scientific Integrity: Credibility/Transferability/Dependability/Confirmability

CRITIQUE The researcher does not mention how scientific integrity was addressed in this study. As a qualitative study, several factors are important in establishing worthiness of findings: triangulation of data, participant observation, and prolonged engagement with participants. The researcher speaks to triangulation of three data sources with little discussion of how he/she became involved with participants in order to understand the problem. A more detailed description of the sample would have made it easier to determine credibility and transferability (external validity) of findings.

Results of the Study

The following themes emerged: a new view of empathy, the diabetes education focuses, and the client-educator relationship. Study participants had a different view of the educator's ability to understand and empathize with them. Laura expressed her opinion about the diabetes educator who does not have diabetes. During the research process I came to a new understanding of empathy as a way of knowing, not merely a way of being. Empathy is a way of knowing of the individual, not of a group, because diabetes cannot be considered a collective experience. In other words, one person's perspective on diabetes cannot be assumed or generalized from others who also have diabetes.

Early in the education of individuals with diabetes, educators promote the notion of the "normalcy" of living with diabetes. Focusing on normalcy may only prolong the integration or becoming process or may make clients feel guilty because they do not feel guilty. Diabetes educators need to view their practice objectively, to become informed by clients' experiences, and to critique their actions. Living with diabetes cannot be defined rigidly within a generalized science of diabetes. Laura succinctly summarized this point, "You can't live the textbook." Laura, Matthew, Mike, and Sandra helped me to understand the inaccuracies of my own assumptions.

CRITIQUE The process of obtaining results was clear and appropriate to a grounded theory approach. The researcher was likewise aware of his/her own knowledge and assumptions regarding the research problem so as to minimize unnecessary bias.

Discussion of Findings

The findings of this grounded theory study provide insight into the experience of living with diabetes, the focus of diabetes education, and the client/education relationships. The recommendations derived from this study represent a significant move away from conventional diabetes education practice. Early in the study I recognized a difference in perspective about diabetes between myself as diabetes educator and the participants. A memo I wrote exemplifies my recognition of these differences: "I am struck by the difference in the way in which Matthew looks at diabetes and the way in which I as a diabetes educator perceive it. I have always seen the diabetes regimen—diet, exercise, insulin, and stress reduction—as the central focus and presumed that these must somehow be accommodated into a diabetic's lifestyle. Matthew does not talk about these aspects, but although he is involved with these, I get the feeling that he does not approach them with the same preoccupation that I do. Matthew's focus is on his body, paying attention to its needs and demands, whereas we [diabetes educators] focus on the 'regimen.' "

CRITIQUE Discussion of research findings was consistent with a grounded theory approach. This shows an appropriate use of memoing, where the researcher recorded his/her ideas while coding and analyzing the data.

SUMMARY OF KEY IDEAS

1. A research critique is a critical appraisal of the strengths and weaknesses of a research report.
2. The writing of a research critique should be clear, concise, well organized, and grammatically correct.
3. A research review provides a description of the most important features of a research study.

LEARNING ACTIVITIES

1. Select a quantitative and qualitative research report to critique.
   a. Examine the title of the article.
   b. Critique the problem and purpose statements.
   c. Critique the conceptual/theoretical model and literature review.
   d. Evaluate the research questions/hypotheses.
   e. Critically evaluate aspects of the research methodology (i.e., design, sample, setting, data collection procedures and instruments, data analysis).
   f. Critique results.
   g. Examine study discussion/conclusions.

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